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THE  
ELEMENTS  
OF THE  
VETERINARY SCIENCE:

CONTAINING  
OBSERVATIONS

ON THE

*Pathology, Physiology, and Diseases of the Horse;*

WITH A DESCRIPTION OF THE MODE  
OF SHOEING ADOPTED BY THE BRITISH

CAVALRY, FOR PRESERVING

THE NATURAL FUNCTI-

ONS OF THE

FOOT.

---

BY J. GRELLIER, SURGEON.

---

“ The irritable fibre being the same in all organized nature, diseases and their remedies will of course be the same for all organized beings : There will then be no distinction between medicine, farriery and agriculture ; but all these sciences will be confounded and become one under the general name of Universal Physiology.”

GIRTANNER ON THE LAWS OF IRRITABILITY.

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MADRAS:

PRINTED FOR THE AUTHOR,

1802.

308888





TO HIS EXCELLENCY  
LIEUTENANT GENERAL LAKE,  
COMMANDER IN CHIEF; &c.

THIS WORK  
ON THE  
ELEMENTS  
OF THE

*Veterinary Science;*

IS WITH THE GREATEST RESPECT

HUMBLY INSCRIBED BY

HIS MOST OBLIGED

SERVANT.

THE AUTHOR.



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## P R E F A C E.

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**I**T was not my intention when I sent this work to the Press to have wrote any Preface, as I had introduced every thing I thought necessary on that head in the introduction. Some circumstances which have since taken place induce me to believe some farther apology necessary:

The work itself is by no means so correct as I could wish, and the list of errata very extensive: The Errors in pointing are innumerable. The most conspicuous of them arose from a defect in one of the presses, by which many of the commas appear as semicolons. They can however upon close examination be distinguished from the real semicolons.

I have no doubt, but more errors exist than I have noticed, as I have but slightly perused it, and being extremely unwell, many errors both of Grammar and of the Press may have escaped me. Some allowance will, I hope, be made, when it is considered

dered, that I could not procure an amanuensis: I was consequently obliged to correct the work as it came from the Press in sheets; an employment of the most tedious kind.

The Plates require particular apology, as there are words wrong spelt, some words left out altogether, and the workmanship (if such it may be called) is truly disgraceful to the artist; a man whom I am informed, is one of the best on the coast. I will however do him the credit to observe, that the Plates in question, are the most miserable productions of his, I have seen.

I have published but half the number of Copies I at first intended; half of which are subscribed for, and if the others find public notice, the original number shall be printed, in which I shall insert the names of Subscribers in Bengal and Bombay, which I have not yet received.

Previous to my undertaking a second edition, many obstacles are to be encountered, and I leave the following sheets either to remove them, or sink in the attempt. Did not ill health oblige me to leave the country,



country, I should perhaps have been more likely to succeed, as I could then have answered many objections which the conciseness of the present work will not permit. Of this truth I have the strongest proof. In the Ceded Districts where I was on duty, I believe the Veterinary Science is indisputably admitted; and the practice of the Salistry, considered in its proper light. At the Presidency, and I am informed at Bengal and other places, the Salistry retains the public opinion and credit. With those who do not consider the object of the Veterinary Science, who believe that alleviating the sufferings of a useful animal, is not worthy of public notice, there may exist an excuse for preferring the dark practice of superstition and ignorance, to the light of science. With men of reflection and sound judgement, there can need but little to urge there in favour of our art; and it is to those whom I particularly address myself. To argue with a man who weakly suffers himself to be swayed by prejudice, who prefers certain manners and practices, merely because from his youth he has witnessed no other;

other ; is a vain attempt : the most convincing arguments can find no reception with him, and demonstration itself would be rejected. Such a description of people may be numerous, and may cloud the science for a time ; but men divested of prejudice will do it every justice, and relieve a useful and beautiful animal, from the miseries induced by ignorance. To effect this, was my first wish, and my particular inducement for publishing the present work ; to expose the absurdities of the present practice, and lead the way to one founded on experience and rational observation.

The most popular objection to the Veterinary practice, is its novelty. The diseases of this climate are supposed to be peculiar. They certainly assume a different shape ; but the principle of disease is the same here, as in other countries. The same nature and causes exist here as elsewhere, and though the form of the disease may elude the enquiries at first, they are soon detected ; and so far from their knowledge and cure being more difficult in this country, they are less so than in most climates.

There

There is a sameness here, which exists scarce in any other country: this perhaps arises from the little variety in the climate; for I have observed as we advance up the country, where the sudden transitions in the temperature are greater, that a more extensive variety exists; particularly of Inflammations.

In the above observations, medical men who are certainly most capable of judging, will no doubt agree with me, and confess that the knowledge and cure of diseases in the horse, is to be attained only by the enquiries and observations of men, who act on principle, and which is not to be expected from the Salistry.







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# INTRODUCTION.



WHEN the knowledge of medicine shall have attained that perfection which many of her sister sciences have done ; when it shall be reduced to one general system in universal practice, and the medical world divested of prejudice, shall direct their views to nobler and more philanthropic aims than individual interest ; the study of any new branch of medicine, and its diffemination for general utility, will be a grateful employment. At present, every addition to our science is treated as an innovation : instead of being protected and foster'd, it has to overcome every obstacle which prejudice, can oppose. Thus, the Veterinary science had to encounter many difficulties which arose both from bigotry and interest. The most respectable and independent part of the medical men, assisted the rise and progress of a useful science ; while the inferior class were offended, that persons whose practice was principally directed to the brute creation, should be dignified with diplomas, and the appellation of Surgeons.

The



The Veterinary science is the study of all animated nature—The anatomy and diseases of mankind are alike the subject of our investigation, with that of the whole brute creation—A Veterinary Surgeon must attend the lectures of professors on human Anatomy, Physick, Surgery, Chymistry, and Pharmacy, independent of the more immediate study of the diseases of horses in the Veterinary College; and although the superior value and utility of the horse over the rest of the brute creation, makes it engross so much of the science, still, the whole animal world is equally the subject of his profession.

It is scarce worth noticing, that interest has created many enemies among the Farriers, &c. of England, who think the Veterinary science may deprive them of a profession which they have so long erroneously practised. Bigoted and confined to a few receipes they received from their fathers, they exerted their influence to prevent the propagation and practice of the Veterinary principles, and among the peasants of the more remote parts of England they no doubt frequently succeeded. But when it shall be known that diseases of animals whatever form they may assume, must have the same causes as in the human subject, and are relieved by a similar treatment; when this simple truth shall be generally received, prejudices will be done away, and the Veterinary science like the practice of physick in the human subject, will be universally received and adopted.

The art is yet so much in its infancy as scarce to have afforded a single publication of its principles; the only one I have seen is by Mr. COLMAN

on

on the structure of the foot, and the mode of shoeing recommended to preserve its natural functions; and I understand there is a second volume very recent from the Press, on the anatomy and diseases of the same part: These are the only books on the subject of which I ever heard, and this scarcity, was my principal inducement for undertaking the present work.

Every one will, I believe, acknowledge, that no art was more defective, than that of the treatment of diseases in horses before the British Government gave it their protection, and rendered the study respectable, by giving the Surgeons of this branch of Cavalry duty a commission.

A College previously established under the direction of Mr. Coleman the professor, (whose ingenuity and labour in advancing the Veterinary knowledge, is too well attested to be capable of receiving any encomium from me) soon afforded a very ample scope, for investigating the anatomy of the horse: and that with so much success, that a considerable progress has been made in Physiology or the functions and properties of parts: this is conspicuous in the foot of the horse, the functions of which were never before suggested, and the consequence of this want of knowledge was demonstrated in the method of shoeing the Farriers pursued, which was on principles diametrically opposite to nature; nor could the most ingenious have discovered a mode of shoeing, more effectually calculated to pervert the structure of the foot.

In England the feet of horses certainly suffer more than in this country; which I imagine proceeds



ceeds in a great measure from the foul stables and litters on which the animal stands in England; what still further induces this opinion, is, that the horses in the country of England, are not so liable to bad feet, as those of London, where the stables and litters are more foul.

The general diseases of the animal, have also been investigated with some success, which could never have been effected by men, totally ignorant of every branch of physick. This was the case with the Farriers who formerly had this branch of medical duty. Unacquainted as they were with the circulation and the properties of the blood, they could have no knowledge of inflammatory complaints, wounds, abscesses and ulcers; ignorant of Physiology, and Pathology, they could form no just conceptions of the causes, symptoms, and cure of diseases; and strangers to Chymistry, they could know but little of the operation of medicine.

These difficulties are however still more conspicuous in this country. The animal is here of more value, and more liable to diseases which require the speediest and most powerful remedies; and the people who are entrusted to direct the mode of relief, are yet more ignorant of the animal, than the most obscure village Farrier in England.

I have been at particular pains not to be prejudiced, and have taken every opportunity to investigate the Native Salistry's\* source of knowledge, which I have to observe is a combination of error, prejudice, superstition and folly, without one  
line

line of conduct and observation, or one ingenious remark to support it. I was informed they were very secret as to their applications—On duty with a Brigade of Cavalry, I have had repeated opportunities of experiencing the reverse—In the most unreserved manner they shew'd me their books, which they explained; and I have such demonstrable proofs of these people's ignorance, as obliterates every possible doubt of the contrary; And I am sorry to add, that the result of such obscure conduct, is attended with considerable loss to the Cavalry and aggravated misery to the animal.

The cure of diseases in the horse, is now studied by men, who having received a medical education, are enabled to make observations on the symptoms &c. which must give some degree of rationality to their practice. The seats of disease in many cases have been discovered, which were never before imagined; The farcy and glanders which were formerly believed to be a disease of the veins, are now known to be in the absorbents; and many cases which were called by these names, and frequently occasioned the instant destruction\* of the animal, are found to be disorders neither attended with contagion or danger. The varieties of fever formerly treated on, do not exist in the horse, and even the ardent fever, very quickly passes to, and concludes in an inflammation of the lungs. Spasms (gripes) and inflammation of the intestines, two very opposite disorders, are now distinguished and treated accordingly, by which many horses are saved, as formerly

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\* Horses supposed to have these disorders, are immediately shot to prevent contagion.



formerly in England they were, and at present in this country, are treated promiscuously for the gripes, and if it proves to be an inflammation (which I have frequently observed) the animal is destroyed. What is termed chest-founder'd, proves to be an inflammation of the fetlock-joint from bad shoeing, compressing and distorting the circulation of the foot.

I have also to observe, that I have found many diseases, (which though not peculiar to this climate, are yet every predominant) perfectly simple and cured with ease; while, by the treatment of the Natives they are rendered dangerous, and cause the death of many very valuable horses. This is particularly conspicuous in diseases of the skin which they, as well as the Farriers denominate the mange; and ulcers arising from an impoverished system, are called by them farcy. In spasms of the intestines (gripes) their remedies have scarcely sufficient force to give timely relief, and in the diseases of the skin they positively second, and render them fatal; Yet they are all complaints void of danger and very speedily yield to a proper treatment. I hope it will not be thought that I make the remotest insinuation in compliment to me having discovered the fallacy of these people; and the true mode of success: as there can be no difficulty in detecting the errors of a Salistry: The only points I have in view, is the necessity of introducing a more successful mode of medical treatment for the horse, and the gratification to my feelings, from the reflection of having endeavoured to diminish the sufferings of so useful an animal.

The



The knowledge of the operations of medicine on the horse, is likewise advanced, and proves very different from that in the human subject. Opium does not produce sleep: Tartar Emetic given in doses of four ounces produce no visible immediate effect: Sugar of Lead, and Hellebore given in extensive doses, have neither increased or decreased the action of the system; Salts, Jallap, and Rheubarb seldom purge; Bluestone, and Verdigris which act so violently when given in small doses to the human subject, prove but simple tonics or astringents in very extensive doses to the horse.

Yet, I will acknowledge with all these advantages, we are yet very much in the dark as to the principles of our practice: this may perhaps in some measure be the effects of the various and opposing systems of physic; that have continually affected the medical world; by which the student's opinion must be for ever wavering and never fix'd. In the midst of such perplexed, obscure, and elaborate theories which have so long pervaded the study of physic, there at length appears one founded on that beauty and simplicity, which is ever attendant on the operations of nature: The medical student has been always forced into the arbitrary opinions he received from the public chairs, nor was he ever permitted to appeal to his reason; if any part appeared obscure, his enquiries were answered by a quotation from the favorite character of the day: a quotation conveying a mere assertion, without adducing a proof.

The new system alluded to, is the production of the late celebrated Dr. Brown; a man educated with

with all the prejudices of the fabricated doctrine of Cullen, but whose independent genius, expelling the mystic clouds of error which surrounded his youth, yielded only to the dictates of his unbiassed reason. He followed the tracts of nature, where minutely observing her various operations in the animal world, he erected that system, which had reason for its basis, and truth for its object.

This system, he published before the death of the celebrated Dr. Cullen, whose popularity created him numerous enemies; and the minds of medical men fettered to their old prejudices, joined against him: and thus, a man who will be for ever venerated in the annals of physic, was reduced to misery and died in want.

But his principles founded on facts, could not long be concealed beneath the flimsy veil of prejudice—He appeals to reason, and reason will be heard: the truth of which is demonstrated in its being at length the present prevailing opinion, although strongly opposed at first, by the most popular and celebrated characters.

Yet, I hope I shall not be classed with his bigoted disciples, who unfortunately with himself, very much retarded the reception, or even the trial of his principles, by carrying them to excess—how ever, their best eulogium, is their being almost universally adopted on the continent of Europe, as well as in Great Britain; and it is a curious fact that I have met with many medical men who follow his practice, altho' totally unacquainted even with the name of the Author; and there are many who know and follow his practice, yet oppose his principles: such is the infatuation of prejudice.

There have been still further valuable acquisitions



ons to Physick made from the assistance it has received from modern Chymistry. The beautiful discoveries lately made in this science, have helped in some measure, to confirm the principles of the Brunonian system, and will certainly form a very remarkable epoch, in the annals of medical Philosophy. It is a curious fact, that many people lament the present dearth of genius in Europe, which must certainly be attributed to the very interesting and useful productions from the pens of Black, Cavendish, Priestly, Brown, Lavoisier, Berthollet, and many others not being universally known; which contain discoveries as great, and of as much real importance, and utility to mankind, as that grand, and happy one of gravity by Newton.

The discovery of elastic fluids must ultimately lead to the expansion of human knowledge. Chymistry, till within this last thirty years, was such a compound of jarring and unintelligible theories, as rendered the study disgusting; but now founded on the most simple facts, it courts the enquiries of its students. Every thing which it advances, is supported by analysis and synthesis, which must prove highly entertaining, while the study of chymical affinity, which pervades every part of organized nature, accounts for, and displays the most wonderful phenomena, affording a most sublime source of useful knowledge to mankind; and embraces so wide a sphere of investigation, that even at this period, a person in Europe cannot conclude a liberal education, without a knowledge of its principles.—With these real advantages, which natural philosophy has so recently gained, it requires but little prescience to assert, that the present century

ture, must produce the most valuable and extensive discoveries, the rays of which at present but scarce extend to us.

The study of Physic, being also reduced to natural observations within the reach of every mind, and which are found to pervade alike the animal and vegetable kingdoms, must prove interesting, while its simplicity and affinity to Chymistry, renders it entertaining; and when a few more years experience shall afford more extensive observations, and thereby regulate the present wavering practice: its general utility will become so conspicuous to those who value the blessings of health, as will perhaps render it a study attached to a general education.

The chapter on the mode of shoeing, is an abridgment, mostly in the words, of MR. COLEMAN'S publication, modified to the trifling varieties existing in this Country. In the section "Of general diseases," I have entered into the nature of those maladies which are so rapidly fatal in this climate: how far my conceptions may be just, I must leave to others, but from the number of cases which I have seen, and my very particular and minute observations on the operation of the remedies, I believe I may assert, that, nine-tenths at least of those diseases proving so immediately fatal, proceed from exhaustion, and would be relieved by very forcible and diffusible stimuli.

It was at first my intention, to have entered on the Anatomy and Physiology of the Horse; but considering that few have leisure or inclination for such a knowledge, I have relinquished it, and merely given the outlines of the circulation, and the absorbent system,



system, which I conceived, a necessary step to the knowledge of diseases. I have also described the structure and functions of parts, in treating of their diseases. In respect to Pathology or remote causes, I have chiefly confined myself, to the section on general diseases: this, I have endeavoured to compress, in the smallest possible compass, as it would otherwise very far exceed the limits of the present work.

I cannot omit noticing in this place, that many persons who have superficially studied the philosophy of Chymistry, and the new doctrine of Physic, have frequently mistaken remote for first causes, an erroneous expression which has assisted in drawing a severe opprobrium on what is termed the new Philosophy; I therefore hope to be excused for digressing a moment on the subject.

The tenets of these persons, are founded on the analysis or decomposition of animal and vegetable matter, which can now be reduced to an eariform state. Vegetable and Animal substances as Oils, Gums, Sugar &c. and Fibres, Bones, Cartilage, Ligament, and animal Fluids, are found to proceed from the same elements variously combined; and though they can be reduced to eariform fluids, the destruction of the smallest particle cannot be accomplished by any known power. The body when dead, putrifies and exhales into those elastic fluids, of which it is originally composed, these fluids mix with the atmospheric air, and soon enter into fresh combinations with other matter, becoming again organized and forming the constituent parts of those substances with which they combine; if in vegetables that are used as diet, they decompose, and enter into some animal combination, from which again emina-

ting, they go on performing, either animal, vegetable, or mineral functions, continually composing and decomposing in endless succession, without loss of matter or property. This process, takes place in every thing which putrifies or decays, and is clearly demonstrated in the animal and vegetable kingdoms, and most probably exists in every part of organized nature. This indestructible property of matter, naturally led to the belief, that the world and its productions could never decay, as not even her smallest particles can be destroyed, only assuming other forms, from the endless variety in her combinations. Hence, the above persons concluded that the world existed, and must exist for ever; and these conceptions, militating against sacred history, Religion, with them became state policy: thus their moral and religious principles being destroyed, they drew conclusions that were wild, bold, and presumptuous, and of a nature which the authors on modern Chymistry and Physic never suggested. These conclusions obviously, must sometimes produce a depravity of thinking and acting, that does more injury to the system they mean to support, than every opinion they could have urged against it; and, if they would but permit their mental effervescence to subside, and calmly investigate their opinions, by the standard of the new doctrines of which they profess themselves, I think they must conclude—that however useful and flattering the late discoveries may be to mankind; and however extensive and desirable may be the knowledge to which they point; yet, they are but the discovery of another link in the chain of nature, which rises in perpetual succession, 'till lost within the Deity:—  
there



there must be a line very far removed from the first cause, which the human mind can never pass, and all opinions relating to the higher faculties as the intellectual operations &c. must be but wild conjecture, on subjects which our present state forbids us to attain : this truth must be conspicuous to every true observer of the operations and phenomena of nature.

The field of knowledge which is opened to us by the late discoveries in natural Philosophy, is certainly extensive and promises a rich harvest of highly interesting acquisitions ; but this proceeds from the oblivion with which it has been obscured, and the perplexed and erroneous systems which had mislead the world—It is by our having at length found the true path to nature, that its novelty, grandeur, and simplicity, sometimes flushes the mind and carries it to extravagant lengths—Thus, discovering some of the properties of matter, and that it obeyed certain laws by which it was always performing functions which could never destroy it, they infer, that reason and the intellectual operations, are but a finer combination of matter, which, escaping with life, occupies some other place in the grand laboratory of nature, or that

— — — There's nought but one eternal flux

“ Of feeble essences, tumultuous driv'n,

“ Thro' times rough billows, into nights abyss.

The dangerous tendency of such principles, must be conspicuous, and it is to be hoped, that some able men will demonstrate to the world, the folly and temerity of such conclusions ; and shew in strong colours, that the same power which gave motion and property to matter, can, and will at the appointed hour, render it inert.

‘Ere,

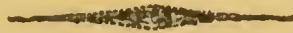
‘Ere, I conclude, I beg to advance a few circumstances in apology—I should never have presumed, to conceive that my present writings could be useful, had any publication on the subject existed; and my intentions will be fully answered, if the present work, but leads to some future regulations, which will convey benefit to the public, and relief to the animal.

On my arrival in this country, I was but little prepared for an undertaking of this kind, and what may I hope, still further plead in extenuation for errors, the whole of it, was written, with the exception of the chapter of diseases of the eyes, in less than four months, amidst the confusion and inconveniencies attached to a Camp in almost continual motion, where my constitution suffered from the effects of climate, so much as to render my return to my native country indispensably necessary. I am well aware these excuses are far from being satisfactory as I was not limited as to time, whatever I might be as to place—I can therefore only urge, that I rely on the liberality of those who so generously encouraged me to undertake it.

Very fortunately the subject is such, as will admit of many excuses as to diction,—an elegant assortment and combination of words on such a subject, is neither expected or required; and I regret I cannot plead the same as to correctness of style—One of my first wishes, was to divest myself of every technical term, and express myself in a manner to be generally understood: this, I thought very requisite, on a subject which probably few have read, and in which I hope I have succeeded—however, with all its imperfections, I humbly submit it, with every respect to a liberal people.



## SECTION 1.

*OF GENERAL DISEASES.*

TO elucidate this subject, I shall endeavour to give a short account of the present prevailing opinion, relative to general causes. This will devilope a system which must be admired for its simplicity, founded on a collection of simple facts, and accurate observations of the progress of nature, by which the study of Physic, is now rendered pleasant and entertaining: and as these principles exist in every living system, and are also supposed to pervade the whole vegetable world, they may perhaps be interesting to those who have never made this branch of natural philosophy their study.

Every muscle in the body, is composed of innumerable fibres, these fibres have the power of attracting from the blood, its irritable property, by which they become saturated with what is termed irritability. This principle is the property of life, but to effect animal (and perhaps muscular) motion, it must be acted upon by a power or antagonal principle; which is found in the natural stimulants, as the passions, food, &c.

Thus, there is a state of irritation, which every fibre in the body possesses, called its irritability; and

and the antagonal power, is termed stimulus.—It is the action of this last, on the former, which produces life.

The irritability, is a property continually accumulating in every fibre throughout the body, and is for ever acted upon by the natural stimuli; as food, passions, heat &c. This action, supports a kind of equilibrium : that is, the power must not be greater than the property ; consequently, health depends on their proper balance.

Since the death of the celebrated Dr. Browne, who was the founder of this system, the irritability has been accounted for in the following manner, and supported by a number of very ingenious, yet simple experiments.\*

The atmospheric air, is composed of two fluids, in about the following proportions : nearly three parts azot, which of itself cannot support life, and the rest, oxygen or pure vital air, which qualifies the former for perspiration and combustion.†

The vital air, possesses a stronger attraction for blood, than for the Azot with which it is combined in the atmosphere, consequently, if the Atmospheric Air comes in contact with blood, the vital air leaves the atmosphere to reside in it.

This

\* DR. BROWN in his *elementa*, not knowing the properties of irritability, calls it excitability ; that is, a power acted upon by excitement or stimuli. But he never accounted for the source which supplied the fibres with this property, which is now supposed from a number of experiments, to be irritability.—DR. DARWIN employed oxygen to account for his theory of Metaphysics. It will be understood in the present instance that oxygen is only employed for the animal fibre, for the purposes of animal life.

† I have not introduced hydrogen, or carbonic acid gas, which are usually found in very small quantities in the Atmosphere, as I imagine them to be mere emanations from the various operations on the surface of the Earth ; and are by no means homogeneous to the atmospheric air.



This process is effected in respiration, when we inhale, a quantity of atmospheric air comes in immediate contact, with a considerable quantity of blood in the cells of the lungs; by which, the pure vital air is separated and absorbed by the blood, while the remainder is exhaled by the breath.\*

It is the vital principles of the air thus imbibed, that is supposed to convey irritability to the system.

The blood, replete with this irritable property, flows to every part of the body, and supplies the muscular fibres; as the fibre possesses a still stronger affinity for the vital air now called irritability, than is possess'd by the blood. The blood, thus exhausted of all its irritable properties, returns to the lungs, to renovate and resume its former functions.

The fibres thus accumulating, would in a very short time produce disease and even death, by rendering the whole body violently irritable. This is prevented by a power being supplied, which possesses a yet stronger affinity for irritability than the fibre, or more properly, conveys it from the body.

This property, exists in every thing under the name of stimulants, and is supplied by heat, exercise, sensation, the passions, emotions and desires, as love anger &c. also by food, particularly if of a spicy and heating kind, as wines, spirits &c. all of which, have the property of consuming the irritability from the fibre; and if they are supplied in excess, they more than consume the redundance and exhaust the fibre

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\* Every material, whether in a solid or fluid form, possesses an attractive power in different degrees: This power, is termed chymical affinity on which all the Phenomena of Chymistry, and perhaps of nature, depends,



fibre, which will induce indirect debility and disease. If, on the contrary, the stimulus is not sufficient, the irritability, (which now being explained we will term excitability), accumulates, and produces diseases of an opposite nature.

It may be questioned, how the whole body, can be deprived of its excitability, by a local application of stimulus; as in spirits taken by the stomach to excess &c. But a communication exists between every fibre in the body, by which one set being exhausted, this soon supplied by the rest. This is proved in exhaustion, and general debility arising from a debauch. The excitability keeps up nearly a balance throughout the system, and the communication is so general, that the excitability of the whole body may be exhausted by local applications of stimulus.

By this it is obvious, that health must depend on the due quantity of these principles, and an equilibrium being supported in the system: and however numerous the diseases may be to which the animal is subject, or whatever shape they may assume, it must proceed from this balance being destroyed, and consequent excess, of either the excitability or the excitement: and it is the knowledge of the action existing between these, that must direct the mode of relief.

If the fibres are overcharged, it would be imagined that a powerful stimulant must be employed to carry off the redundance: but this is not the case, for the very lowest degree of stimulus, acts very powerfully on a large proportion of irritability: it must be therefore used in small quantities at first, and gently increased. Thus when a child is born, it is

all excitability, and the first stimulus is obliged to be very weak, as milk, food &c. but as it advances in life, this property decreases, and stronger stimulants are required, which are produced by growing passions and stronger diet; and by the time the object arrives at maturity, the stimulant powers are equal to the quantity of excitability: that is, the fullest proportion of stimulus, is exciting an equal quantity of the excitability, and the powers of life are then at their highest. After this period, the order is reversed; for no stronger excitement being produced, and those already employed becoming habitual, lose their influence; and infirmity, debility, loss of appetite, and decay of the passions are induced; while the property of excitability nearly exhausted, requires the strongest stimulants to excite it, which, not being produced, it ceases to act altogether, and death is the immediate consequence.

As a still further explanation of this system, I will endeavour to describe it in another view, similar to what I believe is done by Dr. Brown in his *Elementa*.

The excitability, is supposed to be a stated quantity of a property, which every animal must possess necessary to life. This is reduced to a scale of eighty degrees (See Plate the I. Figure the 1) No. 80 is life commenced, No. 40 is life matured, and No. 1 is life consumed.

The excitement or stimuli, allotted to every living creature, is supposed to be in the same stated quantity, reduced to a similar scale of the same number of degrees, and necessary to produce life, by acting on the excitability. The end, or No 1. of the exciting scale,



scale, being brought on a level with No 80, of the scale of excitability (as in Plate the I. Figure the 1.) is an exact representation of the commencement of life—One degree of stimulus, which is the smallest proportion, is just acting on the whole mass of excitability and producing life; which is the case with every recent living production: it is all irritability, while the pressure of atmosphere, food, vision &c. gently stimulate to action: for as I before observed, when the irritability is great, a large quantity of stimulus would cause instant death; and every one will allow, that the common stimulus required for an adult, would instantly destroy an infant.

As you draw the exciting, down its antagonical scale, the excitability is decreasing, and a stronger stimulus is required; which is produced in exact proportion, by the growing passions, stronger diet &c. By the time the scale is reduced to No. 40. (as in Figure 2.) it resembles life at its meridian, and acting in the zenith of all her powers; for it is when the property and the power are equal, that life is at its vigour. This state, cannot however long continue, as every stimulus becomes weaker by habit; and as the excitability becomes exhausted, it requires a still stronger stimulus: hence it is, that aged people require a more nutritious diet, and more support from cordials than young people.

On declining the scale of excitement, we shall find a melancholy reverse; for it now acts on an opposite principle, and the property and power of life, are now decreasing in the same proportion, as they before increased. This must be the natural consequence; for the excitability exhausting, requires a still stronger stimulus, which nature not affording



fording, a general decay ensues. This defect still increasing, graduates the exciting scale down to No. 1 (as in figure 3.)—Life is here arrived at her fatal goal.—The excitability and stimulus are quite consumed, and the expiring object dies.

But even in this melancholy view of the progress of life, we have considered it, in its most favorable point, and in which it is scarce possible ever to occur. The produce of such a life, must have been from a healthy and well formed source, free from accidents in rearing, and moderately indulging the passions which nature has bestowed: such a fortunate combination of events must be the lot of few, and the very habits of life in which we are elevated, and the gratifying of any passion even in moderation, all urge to the destruction of our living principle. What then must be the effects of excess? It is an advance towards decay which no after moderation or precaution can repair; for every stimulus is a forced advance on the scale of excitability; and induces a yet stronger, 'till a premature old age is the result.—Thus, a person may die of age or decay, as is the case with drunkards, and in hot climates where the stimulus is excessive, at the age of fifty or sixty years; while in a more moderate one, the same effects are not produced till seventy or eighty.

Thus it is with domesticated animals: every deviation from nature, is attended with a proportional destruction of one principle or the other; and every one will allow that an animal formed for activity; when under restraint, irregularly exercised, and art employed to prepare his food; are  
deviations

deviations from nature :—Hence the many diseases to which the Horse is exposed.

If therefore the above statement be true, every general disease, must arise from these two causes only : either excess of stimulus destroying or exhausting the excitability of the system ; or the stimulus not being sufficient, induces an accumulation of excitability ; which will of course, produce a set of diseases of an opposite nature to the former ; and every disease of a class, however various, may be the forms which it may assume, is cured by a similar treatment, or medicine of the same class, differing more in proportion than in property.

In opposite climates, opposite diseases must predominate. Thus in cold climates, there is generally a want of stimulus from the absence of heat, and diseases occasioned by excess of excitability will prevail ; while from the excess of heat in the tropics, diseases arising from exhausted irritability must prevail : also the diseases of the aged, must almost in every instance be exhaustion, as the excitability with them, must by the natural progress of life, be nearly consumed—In these cases, a stronger stimulus will generally rouse the deadened excitability to an increased action, by which it may be secreted in larger quantities ; but the action of the system being once increased, the stimulus must be lessened to something below what the object has been accustomed to, by which the property is allowed to accumulate : while by a continued stimulus it would be exhausted. This is precisely the treatment required in all cases of exhaustion, and in this country I have found this mode to be particularly successful in several cases,  
even



even when immediate death was expected. As an example of this kind I shall state the following instance.—The animal was seized with coldness of the extremities, became very dull and had scarce any animation left: in two or three hours, he was seized with general convulsion, all his joints were strongly contracted, and his jaw nearly locked. At this period, scarce any heat could be felt on any part of his body, altho' several Farriers had been employed from the commencement, in rubbing his extremities with spirit of Turpentine, and he had taken two doses of the same spirits, each containing four ounces; two bolusses had been also given him, each containing two ounces of Camphire and Opium. When however he was reduced to the last stage, I was willing to give a full trial to stimulants, and knowing, that nothing but the most powerful ones, could affect a system so exhausted, I made the Farriers mix half a pint of spirits of Turpentine, with an equal quantity of boiling water, which was administer'd, and in a few minutes had the desired effect: a warmth began to pervade the body even to the extremities, the general spasm or convulsion left him, and in a few hours he was perfectly restored. But in this particular instance, where so much stimulus had been employed, we were obliged to guard against its effects, as soon as returning, vital warmth succeeded: This was effected by congee and an emollient diet.—By this disease, many horses are suddenly destroyed in this country, and I would strongly recommend a similar course, tho' not so violent, whenever the least sign of spasm or convulsion is observed, which from my own experience



ence I can assert will be almost always successful. In hot climates most of the chronic diseases in the horse (as the ulcered liver) originate from obstruction; and obstruction is generally the result of that debility in the system which is produced by exhaustion. Spasm and diseases with nearly all the variety of symptoms, as internal pain &c. which we find in this climate, are also induced by exhaustion, and which almost invariably yield to a proper application of excitement.

Diseases of the opposite class, that is. when the natural stimulus has not been sufficient, the excitability of the system accumulates, and becomes morbid; producing debility, languor and many symptoms which very much resemble the disease of the other class; hence it is, that we should be very particular in a few general enquiries, as to the age of the subject, the climate he has been exposed to, and the course of life he has pursued which will give weight to our conclusions. —For example, a youth or young female, elevated in a reclusive and retired spot; who have never indulged in the grosser foods and wines; and whose breasts have never been agitated by desires and disappointments; can never be liable to general diseases of the same class, as a person who has entered into every dissipation of the town. In the latter an exhausted system may be expected, while in the former, we may look for disease of accumulated excitability, which is the class we will now describe.

This class, generally prevails in cold climates where the inhabitants are unacquainted with luxury; also among the young and sedentary — In the whole animal world the same principles exist, and

in Europe and the more northern parts, where diseases of this class generally prevail in the Horse. In respect to the symptoms they are very difficult to describe: diseases in this class seldom or ever attack with that immediate fatality, which they do in this country, unless we admit inflammations of the Lungs and Intestines.—In all cases where there is an accumulation of excitability, the smallest possible stimulus acts in the most powerful manner; as is explained in infancy where the irritability is great, the most sparing stimulus is requisite: To explain the nature of diseases in this class, it will be proper to remark some other general rules, relative to the property and power of Life.

The excitability is equally diffused over every part of the Animal frame, and a connection exists between every fibre in the body; by which means a powerful excitement applied to one particular part occasions but a temporary exhaustion, as it is soon supplied again from the contiguous fibres. It is thus that a very powerful and continued stimulus to one part may consume the sum total of excitability, as is perhaps the case with some poisons; but tho' this communication exists, a part may suffer disease from temporary exhaustion, by a too frequent repetition of stimulus.—This is exemplified after a long and fatiguing march, the joints of the legs, will be for some time more exhausted than the rest of the body:—One arm or any member of the body, being long employed, fatigues the whole system, but is itself more fatigued:—also in persons in the habit of drinking to excess, the capacity of the fibres of the stomach for retaining the excitability is so much destroyed, that



that disease of exhaustion ensues ; and the stomach no longer possessing the power to digest the food, the juices separated from it are crude & unwholesome, and diseases of the stomach and liver, attended with emaciation and atrophy succeed.—The votaries to the softer passions, who indulge to excess, or commence too early, soon hurry themselves into a similar state ; and they will be very fortunate, if they avoid the deplorable miseries of chronic diseases, and merely make an advance on life, and induce a premature old age—The unavoidable attendant of excess.

In this climate, nearly the whole of the diseases to which the Horse is subject, arises from exhaustion, inducing debility ; and obstructions or spasms succeed.—In this class, I conceive are, the farcy, spasms and general convulsions, gripes, locked jaw, and the ulcer'd liver : to which I believe I may add weakness of the loins, and all diseases which produce sudden death without inflammation.

The atmosphere in this climate, particularly during the land winds, must act as a very powerful stimulus over the whole surface of the body, diffusing its influence thro' the whole system. This must often exhaust the Animal in the most rapid manner, and if it ceases suddenly, such a state of debility ensues, as must frequently induce a state of convulsion &c.

Every animal, is subject to daily exhaustion and accumulation. During sleep, the sense of vision, and the mind and body being at rest, there is a great diminution of the natural stimuli ; consequently the property accumulates, and in the morning the body is much more irritable and susceptible of impressions,



pressions, inebriety &c. than in the evening. During the day, the accumulated excitability, becomes exhausted by food, vision, passions, mental and bodily exercise; &c.—consequently, a person taking great exercise, in either body or mind, meets his couch at night with more grateful feelings, than a person of an indolent and inactive disposition. The latter, can however have recourse to another mode; which is, the use of stimulants as wines, brandy &c. for these and every kind of stimulant, occasion a temporary exhaustion of the excitability, and whatever exhausts it in moderation. produces sleep. It is by the particular action of opium on the excitability of the system, which causes the various operations, and seemingly opposite properties, which it appears to have on the animal frame, as is observed in exhausted habits, and the exhausted inhabitants of hot climates, bearing excessive doses; while the irritable habits, of the more northern climates, are violently affected by the smallest quantities.

There is also another temporary exhaustion and accumulation, to which the animal world is subject. This is observed in those countries, where, there are two distinct seasons of cold and heat; also in this climate, tho' not in a great degree, by the division of the dry and rainy seasons: for rain is but another form of cold.—During the winter, the animal being deprived of the stimulus of heat, the excitability accumulates; and in the spring the stimulus of heat, gradually advancing, rouses all the late slumberry passions into action, and the whole animal world feel its grateful influence.—The brute creation, display it in their looks, their condition, and in their desires; and man, will no doubt acknowledge

acknowledge, that his feelings in the spring, are of a more exalted and fertile nature, than in the autumn, or in the winter.—During the summer, the stimulus of heat encreasing, a partial exhaustion takes place, and the rich active feelings of spring decay, 'till the absence of heat, as in winter, again permits an accumulation.

Although these partial exhaustions and accumulations exist; yet, the sum total of excitability allowed to every animal consumes; as is explained in Plate the I. consequently as age advances, these partial accumulations and exhaustions also decay in proportion with the sum total of excitability.

This annual exhaustion and accumulation, is very conspicuous, in those Animals which bury themselves, or lie in a torpid state during the cold season:—The summer heat, has nearly exhausted the whole irritability of the system,\* and torpor succeeds from the natural stimulus not being sufficient to render it active. There is however sufficient left to support existence, and during the winter from the absence of heat, food, sensation &c. the irritability is permitted to accumulate; that when the chill of winter has past, and is succeeded by the genial gales of spring, and the sun's reviving rays; the accumulated excitability is gently stimulated into action, and returning life, gradually produces all its powers in the highest state of enjoyment; 'till summers heat, again exhausting it, a still stronger

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\* This has been demonstrated by experiments on the fibres of these Animals in the autumn, when they are found to possess scarce any irritability; while the same class of Animals in the spring, by the same experiments, are found to possess it in a great degree.



stronger stimulus is required; which not being produced by the succeeding autumn, the animal, again gradually sinks into a state of torpor.—This annual progression of the power and property of life in this class of the animal creation, is a miniature of human life in its most favorable point of view.—The animal's first movements in spring, must be attended with sensations, very similar to the new born infant: the full enjoyment of his powers, as spring advances, and subsequent decay in autumn, are equal to man's maturity and decay: and even the corporal sufferings of the aged, on their death bed, can be no more, than that of these animals in their winter's retreat.

It will thus appear, that the season, when diseases of accumulation prevail, is the cold and rainy: perhaps still more on the first return of heat, as the accumulation, may be then too great, or the return of stimulus too sudden; which causes colds, fevers, inflammation of the lungs, eyes, membrane of the nose, throat &c. which is very much experienced in Europe where these diseases (particularly in spring) prevail. I have also observed them in the Ceded Districts, when the mornings have been very cold, and the mid-day sun very hot: the horses, have been very subject, to colds in the head, attended with a discharge at the nose, and inflammation of its membrane, swelled glands &c. These diseases, are generally relieved, by taking from the system, three or four quarts of blood, and cloathing the animal warm at night: which last, in some measure, prevents the animal from feeling, those sudden transitions of heat and cold, which



which always induce disease. This, is particularly experienced in England, in what is termed catching cold; which is generally occasioned, by exposure to cold or wet, and then suddenly exchanging it for a warm room or fire side, with perhaps the addition of Cordials. These colds, which destroy half the people who die in cold climates, would scarce ever take place, if caution was used against the sudden transitions:—A person does not catch cold, although exposed to the frost of a winter night, or wet cloaths; but it is the sudden change which they seek, from fires, warm rooms, thick cloaths, cordials &c. which, too powerfully acting on the accumulated system produce diseases of an inflammatory nature.

It is I believe, the sudden changes in the temperature, which generally produce fevers. In England, fever in the horse, is usually so violent, that it inflames the lungs in a few hours, and thus destroys the animal. In this country, the fever which I have generally observed, and which is very common in the Ceded Districts, is very different, from the inflammatory kind: The animal, in this climate, not possessing the same quantity of excitability, the effects produced by the sudden transitions in the temperature are very different; producing a low fever of a tedious kind, which I have almost invariably found to yield, two bolusses twice a day, containing, one dram of country Opium and one dram of Tartar Emetic. In this disease, the excitability of the system is so exhausted by the continual stimulus of heat, that the whole action of the system decreases, and produces symptom of universal debility: The horse falls off his food

han

hangs his head, looks dull, and his skin or hide frequently becomes rough and tight.

If the above statement of the remote causes of general diseases is attended to, most of the phenomena of diseases peculiar to these climates, will be, in some measure understood, and the mode of relief so obvious, as to be within the reach of every one.

The weakness in the loins, usually termed, The Pallamcottah disease from its predominating there ; is, I think occasioned by exhaustion : At the above place, I am informed, the land winds very much prevail ; and from what I have before observed in this section, on the effects which these arid winds must produce on the system, complaints arising from exhaustion must be very likely to ensue ; and the weakness of the loins, I have every reason to believe, is seated either in the nerves or spinal marrow ; that, it is not in the muscles, is evident, from the resistance it makes to the most forcible remedies ; and still more, from the peculiar action which exists in all the joints posterior to the loins: an action which any medical man, may observe to arise from a disease in the Nerves : The action is short and sudden, or else it gives way altogether and the Animal trips : in fine, I imagine it to be a species of palsy, and equally, as difficult to cure : if this suggestion be true, it must also be the effects of exhaustion from the land winds or excessive heat.

Spasm

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\* I would here again expose the conduct of the Salistry, who, when the Animal's hide is bound, fires it, conceiving it in this case to be the seat of disease which it never is ; and if the flank heave, the flanks are also fired, as they have no knowledge of the action of the heart or lungs.



Spasm and convulsions, and all the various forms of disease, which so suddenly destroy the Animal; I imagine, arises from the same cause. If, what has been said in this Section, be admitted, these diseases will be found to be a natural result, and what we have a right to expect. We will suppose at Pallamcottah, or any other place where these diseases prevail, that the arid and destructive winds, to which this country is so exposed, has existed some time.—The effects at first, will be a stronger action throughout the system, and all the passions as desire &c. will be exerted; which aiding the effects of the atmosphere, the excitability will be soon nearly exhausted; But yet, from the existence of the very powerful stimulus of heat, a full action is supported: if at this period, a sudden change in the temperature should follow, and rain with cold immediately succeed; The effects on the animal will be, that the nearly exhausted system, not having the strong stimulus that is required; The action of the heart will become very weak, the whole system will be debilitated, and almost immediate death may be the consequence. The exhaustion may however be such, even without the admission of cold, as to destroy life: or the exhaustion not being so great in other animals; weakness of the loins, and other nervous affections may ensue.

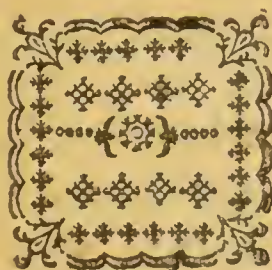
Diseases very similar may be produced, from a sudden return of intense heat after rain or cold; which I imagine to be worse than the former; for in this case, the excitability having accumulated, the excitement, or stimuli first employed should be very small and gradually increased; as a sudden charge



change to heat, or hot land winds in this state, very rapidly consumes the excitability, and proves very destructive.—The properties of these winds, may be also rendered still more stimulant, in their passage over putrid marshes; or over mountains containing Mineral, Metallick, or other exciting particles.—This is mere conjecture; but I conceive by no means improbable.—We have, however, no occasion to call such malignant agents to our aid; as our positive knowledge of these winds, independent of the above, informs us, they are sufficiently destructive to the Animal.\*

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\* A Military Gentleman informed me he had a horse at Palamcottah seized with a total deprivation of the use of his limbs which was cured by extensive mercurial frictions; to which I would recommend internally Mercury and Opium combined.



## SECTION II.

### *OF THE OPERATION OF MEDICINE ON THE HORSE.*

**T**HE operation of medicine on the horse, forms perhaps the greatest mark of distinction, between the study of Physick in the human subject, and the Veterinary science. Medicine on the human subject can act in many ways, as Suderific, Emetic, Purgative, Diuretic, Salivary, Seditive, Tonic, and many others ; while in the horse, we find scarcely more than two forms of medicine on which we can place much dependence : namely, Purgatives, and Diuretics.

It is fortunate that the diseases of horses are fewer in number, and less complex, than in the human subject, as we have so little scope for the action of medicine. The cause of this distinction, obviously arises, from the very different structure of the horse's stomach, which, in the human subject is the chief seat of the operation of medicine. This cannot exist in the horse, whose stomach is so small, as not even to admit of digestion taking place there; it is beside, partly covered with a thick insensible membrane : thus we find, that the most powerful medicine, scarceful affects the horse, unless they



they are of a diuretic quality. Blue stone and Verdigrease, in cases of Farcy and Glanders, I have seen given at the Veterinary College, in doses of two drams, two or three times a day, without any material visible effect: I believe the intention of giving these medicines, was to act as tonics, and may sometimes in this light succeed. I once attended at the opening of a horse who died of the Farcy and Glanders. For some weeks previous to his death, Verdigrease had been administered in its fullest proportion; and on opening his stomach, two or three of the bolusses, were found undissolved, and the stomach and bowels in their natural state, not in the least affected by this deleterious preparation. Sudorifics have not yet been discovered for the horse; Tartar Emetic has been given in doses of four, five, or six ounces without any perceptible operation: In small doses, particularly when combined with Opium, it acts as a gentle stimulus, increasing the appetite and inducing a high state of condition, which I imagine must proceed from its operation as a simple stimulus. Opium on the horse does not induce sleep, but extensively employed will, I believe, from my own observations, affect the brain and produce appearances resembling the effects of Camphire, when administered too copiously to the human subject. Mercury affects the bowels of a horse, in the same manner as in the human subject; but when it becomes absorbed, its influence on the salivary glands is very different, as salivation is, I believe, very seldom produced; in the former, I am however informed of the contrary in this country; but from my own experience, I am led to differ, as I have scarce ever succeeded in procuring a  
complete



complete salivation. The salivary glands might be affected; the gums, roof of the mouth, and perhaps the tongue, may be swelled and sore, but I have never known the discharge of saliva sufficiently increased, to call it salivation, or that the habit could possibly receive any benefit from the discharge of saliva.—The operation of Mercury, may however have all the good effects, intended by salivation, as the benefit arising from the use of Mercury, does not, perhaps, depend on the quantity of saliva discharged, but on a more remote operation, of which that discharge, is only an effect, and, if an increased discharge of saliva in the human subject, proves the system saturated, so also does the sore mouth and gums in the horse.

Our list of purgative medicine is very contracted, as we cannot include any of the purging salts; nor is any purgative effect derived from the roots, as Jallap, Rheubarb &c. nor can Oil of Castor be admitted in this class. Those alone on which we rely, are Aloes and Calomel, and, if softning, emollient, and laxative effects are required, our only resource, is in clisters of warm water or gruel: It is possible, we could extend our list of purges from the Cathartic Resins, but no advantage could result from it, as they are all of the drastic tribe with Aloes and Calomel. In Diuretics, we are however more successful, as the kidneys are operated on, with more ease than any other internal part. The Turpentine is of this class, from which we find the most extensive benefit, and however arbitrary the name of Diuretic may be, the good effects produced, are certainly, not from the simple operation of

of increasing the discharge from the blood, but act on a much more extensive scale, of which Diuretic is only a part: In fine, the operation of that class of medicine generally termed diuretic, is of such consequence to the Horse, that I shall appropriate to it a distinct Section: previous to which, I shall make a few observations, on the general operations of medicine.

The action of medicine on the Horse, like their diseases, is not so complicate as in the human subject. Providence having limited their operation, has with her usual regularity, also limited the number of diseases incident to the animal; which probably arises from the peculiar structure, and œconomy of the horse's stomach, while the extreme sensibility, and universal sympathy of the human stomach, must produce a more numerous form of disease.

Medicine, like diseases, is divided into two classes. The first comprises those, which are stimulant, and more or less diffusible; and the second, those which are cooling, and soothing in their effects. These classes, are joined by those ingredients which have no particular quality, and used as simple diet, which include the more common food, as rice, bread, milk, vegetables &c. which stimulate from their bulk and separation in the stomach and bowels, rather than by their property. Thus medicines of the stimulant class, are employed, when the action of the system is languid, and requires to be increased; while cooling, and emollients are employed to soothe and reduce the system when the energy is too high; and those articles, which have not much of either those qualities, and what the habit in the  
state



state of health has been accustomed to, are proper for the healthy state.\*

The stimulant class, comprises the Turpentine, and Resins, which operate as Diuretics; and Calomel and Aloes as purgatives. These are the particular stimulants, of the kidneys and bowels.

The more general stimulants internally employed, include the Diuretics before mentioned, Opium, Tartar

Note \* I have here with the generality of the profession, differed from Dr. BROWN's opinion of medicine, who places them all in the stimulant class, only differing in degree. I must however acknowledge there are many arguments to be advanced on either side; for mild, farinaceous and vegetable substances, are generally placed in the class of emollients; yet, they are thenatural stimulants of the bowels, and produce sufficient stimulus to support an healthy state. For example, the Brahmins in this country and many peasants in Europe, use but vegetables and milk, both of which, are classed as emollients. It was these effects, which perhaps caused Dr. Browne, to consider those articles as stimulants, but in a less degree: A person accustomed to live very high, would soon feel the cooling and emollient effects of vegetable diet, on which he would probably starve; yet, to prove that they are positively stimulant, the lower class of Irish, are accustomed to live upon skimmed milk and potatoes, and are yet healthy and stout. It would thus appear with Dr. Browne, that all articles whether of food or medicine, which are less stimulant, than the constitution has been in the habit of receiving, produce cooling, and emollient effects; while those articles, which have more stimulus than the habit has been accustomed to receive, produce stimulant effects. This is further supported, by what every medical man must have observed. that, persons brought up chiefly on vegetable diet, and who are not in the habit of drinking spirits or wines, are much sooner affected by medicine, than the opposite class of persons: as a still further support to his doctrine, a person half famished would be almost intoxicated by a basin of weak soup, which at another time, or on another subject, would be an emollient: again, a person very much exhausted from a violent and fatiguing march, will receive immediate, and considerable energy, from a basin of warm tea, which, at another time, would be recommended as a relaxing stop. We are therefore led to believe his principles are in some measure just, and that most articles, whether medicine or food, are more or less stimulant: the operation of which, depends in a great measure on the temperature in which they are given, and the general state of the body.

This



Emetic, Blue Vitriol, and Camphire. Externally, the Turpentine, Mercurial Ointment, Preparations of Lead, White Vitriol, Blue Vitriol, Oil of Vitriol, Tar, Spirits of Wine, Camphire, Mango Leaves, Rowels, Setons, &c.

As emollients and refrigerants, we have recourse to softening Clysters, and the use of Nitre internally. Externally, soft fomentations; to which we add as refrigerants, Tamarind leaves, Mergosa leaves, Vinegar, Cold Water, and Crude salt of Armoniac, bleeding &c. In the class of emollients, are included every thing which softens and insinuates its relaxing effects into parts that are too dense. Refrigerants or cooling medicine, are supposed to diminish heat, and are used with that intent, in superficial inflammations which will admit of being dispersed.

I am aware, this mode of classing the properties of

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This view of medicine is very similar to the property of heat, which exists more or less through every part of nature: the gradations of cold, being, but a proportional diminution of heat. Thus, by Dr. Browne's theory, medicine of every description, contains stimulus, the lower class, or what we call emollient and cooling, possessing but a less degree of it; and every medicine differing in degree, is, but a variety in the proportion of stimulus.--Temperature, diseases, and medicine, are thus reduced to parallels, and the two last, according so much with natural observations, as well as with that admirable simplicity, which is known to cause many of the natural phenomena (a simplicity which probably pervades the whole of organized nature) is by no means their least recommendation.

Yet, however plausible Dr. Browne's doctrine of medicine may appear, the mind will at first, feel some force in allowing the same properties to Brandy or Opium, as to those of water or congee: difficulties will arise, at giving the same properties to Marshmallows or Gum Arabic, as to the Resins and Turpentine, however differing in degree. But the difference of these theories are not great, when it is considered, that the same effects are allowed by both doctrines; for the dispute, is only, whether emollients act from having a contra property to stimulants, or, whether their effects do not proceed from a proportional diminution of stimulus.--Allowing either, the practice is the same.

of medicine, will admit of controversy. A work of this kind is generally reduced to practice, by persons not in the habit of studying and investigating the apparently obtruse operations of medicine; I have therefore accommodated every part, which may immediately influence the practice, to the capacity of every person, which, is one reason for my reducing their general effects to two classes: one, to stimulate; and increase the action and energy of the system; and the other, to soften, cool and reduce it. Another reason, is my belief, that almost every medicine, acts by these two powers; or rather by a variety in the proportion of one: that is, that those substances which are more stimulant than the habit has been accustomed to receive, act as stimulants; while those substances which contain less than the habit has been accustomed to, are cooling.\*

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Note \* One of the difficulties attending this simple classification, arises, from the vegetable acids and preparations of lead being sometimes used as refrigerants, at others, they are employed as tonics or stimulants. but this seeming contradiction will be in some measure obviated; when it is considered that refrigerants, are generally confined to those inflammations which will admit of being dispersed; and is effected by their astringent qualities, strengthening the action of the vessels, to carry off the superabundant fluids. Medicines of an opposite nature, frequently produce similar effects, by operations which are perhaps little understood: for example, I have frequently treated cases of Hernia Humoralis in the human subject, with equal success, by remedies of opposite properties; sometimes with warm poultices of bread and milk, and at others (under precisely the same circumstances) with cold applications of goulard water: each mode is generally successful, yet, they must act on different principles: perhaps the softening poultice opens the pores of the skin, to admit the discharge of the thinner parts of the blood; while the extract of lead, succeeds, by increasing the tone of the parts, to carry off the obstructed or over abundant fluids.

Another difficulty will arise from the operation of many poisons, which cannot be explained, by either excess or want of stimulus, these poisons, very probably destroy from their Chymical affinity, as is observed in unburnt lime and other caustics, which, powerfully attracting the carbonic



I conceive it is a duty attached to the subject on which I am treating, to expose in strong colours, the absurdity of some pretended diseases, and medicines, described in this Country.

In gripes, the intestines of a fowl or chicken is recommended, and generally administered ; it has also the credit of giving relief, and being a purgative. These properties I always suspected and from very repeated

Carbonic acid (which is a constituent part) from the flesh, it becomes disorganized, and putrefaction, which is but a perfect decomposition, rapidly ensues. I think many poisons, the operations of which, are not understood, act by this simple affinity for one of the constituent parts of the animal fibre. We find that even Arsenic, is rendered innocent, by giving with it a quantity of the heper of sulphur, for which it possesses a particular affinity ; and what will further tend in support of this opinion, is, that many poisons, which were before imagined to act on the blood, are now known to act on the animal fibre or solids.

The celebrated Dr. Cullen in his *Materia Medica* in the article "Sedantia" i. e. Medicine which he expresses to be of a cooling nature, (vide *Materia Medica* page 292) in reduces Opium, Camphire, Alcohol Brandy, Wines, Tobacco &c. still further, under the same property, he says, "in the gradual use of Opium, and of Wine, the stimulant power is first exerted ; so that small doses are ready to prove stimulants, rather than sedative ; but for obtaining the latter effect, it is commonly necessary to give a full dose."

With every submission to so great a man, may I be permitted to ask, if there is a known article in the world, which Cameleon like, diametrically changes its properties as above described ? If a small dose is a stimulus, most undoubtedly a large dose must prove a more extensive stimulus. It might be asserted with the same propriety, that a small quantity of a noxious article should poison the system, but in larger quantities opposite effects will be produced. — This contradiction is thus explained — a small quantity of wine, proves exhilarating by its gentle stimulus, but if taken in larger quantities, it violently stimulates, and in consequence so exhausts the system, as will afterwards produce debility and sleep, until a fresh portion of irritability is accumulated. Opium acts on precisely the same principle : hence, the effects must vary according to the proportion in which it is given, and the state of the body, which accounts for the opposite effects which it frequently produces. Thus, when the state of the body is exhausted, as in hot climates, large quantities



repeated enquiries, I find that other remedies have been used with them, as Clysters, Wine, Arrack, Chillies, Opium, Camphire; either of which is certainly more calculated to relieve than the bowels of a fowl; and, if a discharge is produced, the Clyster which is almost invariably an attendant, clearly accounts for. However, to ascertain the point to a demonstration

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of Opium, as four or five grains, are requisite to act on the exhausted system; and hence it is, that in cold climates, as in Sweden, Denmark, and the more northern parts of Europe, half a grain will sometimes produce violent effects: in fine, the operation of Opium may be further illustrated by exercise, which when gentle, proves exhilarating and strengthening; but when in excess, exhaustion, sleep, and debility, is the consequence; and it will be found, that every thing which exhausts the system without producing sleep, &c.

The inebriety which is occasioned by Wines and Opium, proceeds from their very diffusible qualities, acting on constitutions that are not accustomed to such stimuli; thus people may accustom themselves, to take almost any quantity, although at the commencement, very small quantities produce violent effects; and just on the same principle a common relaxing fluid, as Broth or Tea on the stomach of a person half famished would produce the same effect, as Wine and Opium on the stomach of a healthy person. The more giddy intoxicating quality of wines and fermenting liquors, most probably proceeds from the quantity of fix'd air which they contain, as all mineral waters containing this air, produce the same effects; and the acid of fermentation of bad wines, and the acid which they contain, clearly accounts for the disagreeable effects which they sometimes produce on the stomach and bowels, different from the operation of Opium.

Again, a large quantity of Brandy being taken suddenly into the stomach, will produce vomiting, by its excessive stimulus: Opium, also when given in excess, from the same property, produces the same effects. Many other difficulties, I think would be obviated, by admitting the principles of Dr. Brown, and surely the inconsistency of classing stimulants, among sedatives to lower the action of the system, must be much more perplexing to the student, than the former; which, (as far as my very humble opinion extends) is in general satisfactory when the first, only apparent contradictions, are removed; and which certainly do very much give way, on minute investigations; which cannot be effected by Dr. Cullen's mode; in which investigation only leads into still greater perplexities.

monstration, I had two fowls opened, and their intestines taken out immediately and administered warm ; after which I examined the animal very particularly for two days, without observing the most distant possible effects, either from the intestines, or by any increase or decrease of the action of the system.—This pretended remedy and purgative I have repeatedly tried on my own horses, and always without effect.

I wish to be the more particular, in exposing this inconsistent practice, as it is so very general, and as there is scarce a person who keeps a horse, but is acquainted with this pretended and fallacious remedy.

Another absurdity nearly allied to this, and which still further exposes the above, is, a disease pretended to ensue from eating fowl's dung. It is, I believe, a well known fact, that fowls are kept in England with the horses, and it is very common to see them picking the oats while the animal is feeding, and must of course frequently dung upon his corn and hay, yet no unpleasant effects have been produced. Verdigrease, Blue Vitriol, and the most violent medicine scarce affect the horse, yet, here is a disease fabricated, in consequence of the animals eating a small quantity of fowl's dung. This preposterous account I imagine must originate with the Salistry whose absurd superstition and prejudices can alone excuse. We are told "it is a kind of poison, making his flanks heave, and his dung variegated with an unusual kind of matter."—The food of a fowl, is innocent, farinaceous vegetables, and the intestines are frequently eat by dogs, an animal  
much



much more susceptible of poison than the horse, yet no ill effects are produced. The dung of a fowl, can be little else but the pulp of the grain with the nutritious parts extracted.

Then by what process, can this substance produce this variegated matter, from the large, strong intestines of the horse? and to render this absurdity still more conspicuous, this very poison, which is said to produce, if neglected, all the symptoms of broken wind for life, is recommended in bowel complaints: for the intestines when administered as a remedy are full of dung. In this case, the "poison" accommodates itself to the animal's state, and removes disease. Such accounts may be expected from a Salistry but is scarce excusable, from a man who aims to be thought possess'd of sense. Hospitality should no doubt bestow extensive privileges and encouragement to an unfortunate stranger, and as such, he is entitled to the most public and liberal support, and which I have no doubt he very highly merits; yet it is a matter of regret, that he was not so happy in the choice of his subject on which he writes, as in his other pursuits; by which he would have prevented, the present very unpleasant part of my duty, which I owe, both to the public, and the science which I profess.

I have dwelt particularly on this subject, as I conceive it of consequence to the practice, that such absurdities should be removed. It is not however the above remarks alone, which provoke such unpleasant reflections, but the continued chain of pretended remedies, and erroneous description of diseases, generally mistaking symptoms for disease



or effects for causes. These errors pervade the whole of this author's writings, by which the practice must be still more degraded in the minds of an enlightened people, instead, of being exalted to that respectability, which, as a liberal science it is entitled.

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### OF DIURETICS.

FROM what has been already said, on the subject of the horse's stomach, it is obvious, we can place but little dependence, on the operation of medicine in that vicera; we are therefore led to seek some other channel, by which we may reduce the system to some medical influence: this is effected by the kidneys, which are found to be very susceptible.

The kidneys, are two large glands, situated under the loins. They are employed to secrete the more watery and saline parts of the blood. Any medicine possessing the property of increasing this secretion, is termed diuretic.

They secrete two kinds of urine, one is from the blood which is saline, deep coloured, and small in quantity, which takes place when the animal drinks but little; the other, is in consequence of drinking large quantities of fluid, the watery parts of which, pass off very soon, slightly impregnated with the former kind.

Every person must be astonished at the operation of diuretics, when it is considered the routine which fluids must perform, previous to reaching the kidneys. When a substance is first received

in the stomach, it passes into the bowels, from whence part of it is absorbed, by very minute hair-like vessels called lacteals, by which it is conveyed to their glands: from thence it passes up the chest, in a tedious manner, through a very small tube, and empties itself into a vein going to the right side of the heart, from which it must be conveyed through the lungs, before it can reach the opposite side of the heart. It is then conveyed through the large artery, which gives out the emulgent to supply the kidneys, where the secretion, takes place drop by drop, through two long tubes which enter the bladder. This course must be pursued, before any medicine or substance taken by the stomach, can possibly reach the kidneys; yet, we find that many substances give their colour, and odour to urine in half an hour, & frequently in less time, which may be observed by a person chewing a few grains of Rheubarb, and his urine will shortly be coloured: also Turpentine, as the Balsam Capavy or Canadensis give their odour to urine frequently in a few minutes.

I think it is very possible, there may be two modes by which diuretics produce their effects. The first is by simple stimulus acting on certain branches of nerves in the stomach, which are connected, or act, by sympathy with those in the kidneys: thus, on a certain stimulus, being applied to the stomach, an irritation of the kidneys may be produced. This is the more probable from the very numerous branches, with which the stomach in the human subject \* particularly is supplied; they may

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Note \* Hence perhaps the more extensive operation of medicine in the human subject.



may act on the same principle, as immersing the hand in cold water on getting out of a warm bed, a sense of stimulus will be conveyed to perhaps every part of the body, by the connection of nerves, and the bladder is also immediately stimulated to contract: this is farther exemplified in cold weather, when much more urine is secreted than in warm: Medicine also which affect the kidneys, generally increase perspiration, and have the character of deterging the lungs, which I think is a further proof that diuretics may act, without being conveyed to the kidneys, as every person must be convinced, that perspiration is produced from sympathy: that is, the branches of nerves in the stomach being affected, immediately pervade or influence the whole body, where it is positively known, the medicine could not possibly have had time to extend to the skin: for example, a person drinking a quantity of warm fluid, will immediately perspire, and why may not the kidneys have the same property, of being affected by certain stimuli, when we find, persons, not in the habit of drinking spirits or hollands, will frequently feel their effects, by the frequent discharges provoked from the bladder, before it can possibly reach the mass of blood: & what will still further support, the probability of this property in the kidneys, is the very great connection (which will be hereafter described) between the kidneys and the skin. This is a subject, which would afford a much more ample scope, if the limits of the present work would admit.

The second mode, by which diuretics may produce



duce their effects (though slower than the former, yet much more rapid than by the usual and tedious progress of chyle) and which I imagine to be the customary mode of operation, is perhaps as follows.

I believe that most articles which have diuretic properties, independent of the first kind described, are more or less volatile and penetrating; generally the produce of the vegetable kingdom, and contain a certain quantity of the more subtle and volatile particles of the vegetables from which they are produced. When the diuretic substance (we will suppose either) is received in the stomach and intestines, we are convinced that it is greatly divided and attenuated, possibly entirely decomposed: in either case, the more volatile parts may escape into the lacteals, and being very active, may penetrate them, and pervade their whole length with rapidity ascend the thoracic duct (not by mechanic force which is employed to convey the chyle, but from its own specific gravity) and be thus conveyed into the blood: where it may diffuse itself, and act as a general stimulant, or partial to the kidneys only.

By this process, diuretics will affect the system just as we find them operate in their usual mode: that is, in a few hours, according to the state of the animal. It is also a regular, and I think a natural mode of operating, and what we have a right to expect from diffusible and stimulating substances; and, if the absorbents have the property of decomposing fluids, and circulating their elastic gases, the theory above ventured, must be free from speculation and a natural result.

This mode of operation, will account for Ether

Holland

Hollands, Turpentine, Onions, Asparagus &c, giving their odour so soon to urine ; the time required for which, may differ according to the state of the body, and the ease with which the volatile parts are separated. Rheubarb and other ingredients, by this mode, may also give a tinge to urine in a very short period, when it is considered, how intimately the volatile parts are sometimes blended with the colouring matter of vegetables, and that it is not necessary, that a complete decomposition shall take place, to reach the system more rapidly than by the usual progress of chyle.

Those substances which are not very volatile and diffusible; yet stimulate the Kidnies, are generally acrid or saline ; as Cantharides, Squills, Onions, Diuretic Salt, &c. which may operate by the first mode, stimulating the nerves of the stomach very strongly ; by the second mode, though not so rapid; yet stimulating the kidneys when they arrive there ; or they may act from these properties conjointly : first acting on the whole system, and more particularly on the kidneys when they reach the blood.

The substance of many diuretics, are positively known to be conveyed into the system, in a much shorter time than the natural progress of chyle will admit ; yet, no other medium or passage is known leading to the Kidnies. Turpentine will frequently give its odour to urine within half an hour, in which case, the very positive existence of the substance having reached the kidneys, is detected ; and the very supposition of a more direct conveyance than by the lacteals, would present a still more inexplicable phenomena, as such gross vessels, surely, could never have escaped the observations of  
so



so many able and curious Anatomists. By what power then is it possible, that urine can receive the odour, and even colouring matter of these ingredients, if some such operation as above described does not take place? Parts we know may communicate, or be affected from sympathy, but no one will assert, that sympathy or nervous communication can give colour or odour. Therefore, as these effects are well known to exist, I must strengthen my theory, by taking advantage of the impossibility of their having any other mode of acting: which operation is the more probable, when it is considered, that most diuretics which act so soon, are more or less of a diffusible, volatile, pervading, and penetrating quality.

There is an intimate action or sympathy existing between the kidneys and pores of the skin, and these hold a more remote one with the lungs. The first, we before observed from the increased secretion of the kidneys in cold weather, when the skin is dry, the urine being then copious and pale; whereas in hot weather, the skin is moist, and the urine small in quantity and high coloured. This is perhaps the healthy change, which accommodates itself to the varieties in the temperature. Decease may sometimes be detected by this standard: every deviation from this rule is the effect of disorder in the system, or heat and cold imprudently applied, the perspiration is checked and thrown on the lungs which produces oppression, cough, fever &c. whereas, had it passed by the kidneys, the system would not have suffered.

I however believe that the benefit derived from diuretics, arises from more general properties than



the word diuretic implies, as their most extensive benefit, certainly does not arise from conveying the redundance from the blood ; but from the general stimulus which it imparts to the whole system, as in cases of debility, puffed-legs from want of energy in the circulation, particularly in cases of exhaustion, and next, by increasing the attraction of the blood to the kidneys, for the purpose of diverting it from inflamed parts, as in inflammation of the lungs, &c.

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### P U R G A T I V E S.

Another mode of the operation of medicine on the horse, is by purgatives, the principal ingredients for which, are Aloes and Calomel. The operation of purgatives in the horse, I imagine commences in the intestines, as the stomach is so little liable to be affected. When arrived in the duodenum, it stimulates the mouth of the bile duct, increases the discharge, and removes any mucus accumulation which may obstruct the orifice. The innumerable small mouths of the Lacteals are also stimulated, by which obstructions are frequently removed, which operation may be expected to have taken place, in those cases, in which the Animal is previously low and reduced, but regains his condition after the use of physick. In this country, the Animal is very subject to have these vessels obstructed, by sand and small gravel accumulating from his eating foul grass ; The secretion of chyle which nourishes the blood, being thus obstructed, the animal will fall away, and his blood becoming poor, blotches, sores, and baldness, very much resembling

assembling the manage, frequently succeed. It is also possible, that the accumulations of dirt, by obstructing the biliary duct, may sometimes be a remote cause of ulcered liver : first producing the yellows or jaundice, and ultimating in Schirrhus.

Thus we find the benefit arising from Purgatives, must be from the following effects, either separate or combined.

First, by increasing the action of the bile ducts, and irritating the orifice, by which more bile is discharged and obstructions removed.

Second, by irritating the mouths of the Lacteals, causing a temporary reversion of their functions ; for they now discharge their contents instead of absorbing, by which the blood is deprived of a considerable quantity of chyle or nourishment; which is a desirable effect when the habit requires to be reduced : This discharge will also soften any accumulated fæces, which might otherwise do injury, by obstructing the intestines.

The third and last, is a general stimulus produced through the whole length of the intestines, which causes them to throw off the over-abundant Mucus, which frequently obstructs the mouths of the Lacteals ; the worm-like or peristaltic motion of the Intestines is also much increased, by which they discharge a great part of their contents.

This form of medicine, I believe to be of more general use in hot climates than in cold. Extensive doses are used in this country without much reducing the animal ; while in England, a violent dose is generally attended with tedious ill effects. The liver in this country, is as much subject to be diseased in the horse, as among the natives, and more  
horses



horses are destroyed in consequence of ulcer'd livers, than is generally suspected.

A Military Gentleman in the Honorable Company's service very much in the habit of keeping and paying great attention to horses, informed me, he had four horses opened, which died of ulcered livers in the space of two years ; and from my own observations, I am confirmed, that it is a very common and fatal disease. In this case, an early and more general use of mercurial purgatives might probably sometimes prevent it, which is the only mode that can be recommended as probable to be beneficial : for I imagine it may be with ease prevented, although the cure is impossible.

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### M A S O L S.

THE word masol, implies medicine; but custom has confined it to cordials, a class of medicine much required in this climate. Themost proper times for administering them, are during wet and cold weather, after, or during long, continued, and severe exercise, as campaigning and night marches ; in which last they are particularly serviceable, and ought to be given to every horse after, or during such service, which I am convinced would frequently be the means of saving them.

During one of these marches, two horses died in consequence of exhaustion, which, from my observations on the operation of medicine in this country, would have been saved, had timely and diffusible cordials been administered. We had in the Morning marched twelve or fourteen Miles ;  
after



after we arrived at our ground, we received an order to be on our horses at four in the afternoon, and marched till seven o'clock next morning, over a very rough country, the horses having no kind of support during that time. One of the best horses of the Sixth Native Cavalry was exhausted about three Miles before we came to our place of destination, and his rider with difficulty led him the remaining distance, when the Animal was seized with strong general convulsions and died in a few minutes. If a strong diffusible cordial had been administered, when the horse first appeared exhausted, there is scarce a doubt but the animal would almost instantly have recovered. One of the Gun Horses of the 25th Dragoons, died in a very similar manner the same march, and might no doubt have been saved by the above remedy, which unfortunately could not be procured.

I think, to prevent such losses, every Farrier, Salistry, or Quarter Master of a Troop, previous to these forced marches, should be supplied with a pint bottle of Turpentine, and as many cordial bottles as there are horses, which cordials, should be given when they have performed about two thirds of their march, and if any horse is affected as in the above cases, about a claret glass of Turpentine should be mix'd with an equal quantity of Water,\* and poured down his throat by means of a horn; friction of the extremities and warm cloathing would also assist. This plan could be pursued without any inconvenience, and would frequently be the means of preserving a valuable animal.

Cordial

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Note \* If hot it would be preferred.

Cordial Bolusses should be in the possession of every person in the habit of keeping a horse, as most of those diseases proving so rapidly fatal, proceed from exhaustion, and can be relieved only by immediately administering very diffusible cordials. What I mean by cordials, are medicines supposed to have the same effects as masols, and which I recommend as their substitutes, being more convenient in their form; more extensive and powerful in their operations; and affording a more accurate knowledge of the quantity given.

*As a common Masol.*

*No. 1.*

Take of Opium and

Venice Turpentine, of each four Ounces.

Oil of Anniseed or Mint one Ounce, Mix them into a mass, and divide into twelve bolusses, one of which may be given every other day.

*No. 2.*

Or, take of Opium one Ounce and a half.

Camphire one Ounce.

Ginger four Ounces.

Oil of Mint or Anniseed one Ounce, mix and divide as above.

*No. 3.*

Or take of Opium four Ounces.

Tartar Emetic one ounce and a half, Mix water or syrup sufficient to soften to a mass, and divide as above. one of them may be given every  
Night

night : these last are particularly useful in colds or slight feverish dispositions.

If medicine cannot be conveniently procured, and strong cordials are indispensably necessary, a pint or a bottle of good Arrack, may be given with a handful of ginger, and an ounce of essence of Mint.

If a very diffusible stimulus is wanting, as in convulsion or gripes, give a quarter of a pint of Turpentine, mixed with an equal quantity of boiling water, and if convenient, Oil of Anniseed or Mint may be added ; after which, one, two, or even three of the bolusses (numbered two.) shold be given.—Friction of the extremities and spine, with Turpentine ; and Clysters of hot water or Tobacco smoak will assist.





## SECTION III.

OF THE CIRCULATION OF THE BLOOD,  
AND THE ABSORBENT SYSTEM.

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ON THE BLOOD.

**T**H E Blood when in the animal, is fluid, but on being exposed to the atmosphere, it separates into two parts ; one is the serum which is always fluid, and the other is coagulable lymph, so called from its coagulating when exposed to the atmosphere : this last is in much larger proportion in the horse, than in the human subject.

Blood differs in colour and in its properties while circulating, for when flowing from the heart it is scarlet, but returns purple, or rather a claret colour, which will be explained when describing the texture and functions of the lungs, circulation &c. The quantity of blood in the horse has never been ascertained ; but immense quantities have been taken from him without producing death. I believe a Horse has lost forty four pints in twenty four hours for inflammation of the lungs, and recovered ; while the same animal would have been destroyed by half that loss in a shorter time, as it in a great measure depends on the size of the orifice

fiſce from which it is taken; if from a ſmall one, the veſſels ſoon accommodate themſelves to a gradual loſs, and which loſs is nearly ſupplied by the continual flow of chyle. It becomes therefore of conſequence in bleeding, to always make a very large orifice, as three quarts taken away in two minutes, is preferable to twice that quantity in twenty minutes; unleſs in very local inflammations, where you can poſitively draw the blood immediately from the part, but in all caſes of general inflammation, or of ſome principal organ of life, as the lungs, brain, inteſtines, &c. the good effects muſt depend in a great meaſure on the quantity loſt in a ſhort time, unleſs a very conſiderable quantity indeed is required, in which caſe you muſt have recourſe to intervals between each five or ſix quarts: hence the folly of bleeding in the palſate vein and other ſmall veſſels which can give but a few ounces of blood, when the general habit requires to be relieved from the oppreſſion of a too loaded or inflamed circulation.

The functions of this fluid are of the greateſt importance. It conveys nutriment to ſupply the conſumption of every part of the body whether fluid or ſolid. In wounds or fractures, it ſupplies the new growth, whether of bone, muſcles, membranes, blood veſſels or nerves: the coagulating lymph organiſes veſſels are formed, and the new ſtructure riſes complete: after a wound, a ſalutary inflammation is induced, and, as in all inflammations, the coagulable lymph is thrown out, and becomes the bond of union to the diſſerved parts; new veſſels form correſponding to thoſe divided, and the injured part again performs its functions.

This

This proves the error of Farriers in what they call cleaning or washing of a wound, in doing which, they force away a rich balsamic matter, which protects the wound from the atmosphere, and the new granulations of flesh from being injured.

I would wish in this place, to impress one circumstance which produces more injury in wounds than is generally imagined. I have said that one of the properties of matter covering the surface of an ulcer, was to protect it from the atmospheric air; which property I imagine, from the very severe effects attending the exposure of a wound, and which in the horse is but seldom guarded against, from the rude method of dressing them by Farriers as before observed; who generally wipe away not only the matter, but the new granulations of flesh; thereby preventing the salutary growth, and exposing the naked fibres to the atmosphere, from which it immediately detaches and imbibes the oxygen, and a very increased irritability is the consequence.

It has been asserted, that the blood was subject to disease. This assertion is supported by the *Lues Venerea* in the human subject, and the glanders and farcy in the horse. If a quantity of blood is taken from a farcied or glandered horse, and introduced to the circulation of one that is sound, either farcy or glanders will be the consequence. It may be inquired why it will not produce general disease, as the diseased blood flows through every solid in the body? The reply will refer, to particular parts being affected by certain stimuli, which will affect no other part; as Bile stimulating the intestinal canal, Semen the urethra, and the *Lues Venerea* attacking the glands and bones; while in the horse glanders



ders and farcy affects the absorbents only. Innumerable proofs of this peculiarity or sympathy in nature might be adduced, if it was necessary.

From what has been said, it must be obvious, that this fluid pervades every part of the system, even the most solid fibres of the densest bones, supplying the perpetual waste, and renewing the particles of wasting living matter throughout the body; which gave rise to a belief, that the blood was as much alive as the solids. This is a very old opinion, but was for many centuries done away, till renewed by the researches and experiments of the late Mr. John Hunter, to whom I refer those who doubt this opinion.\*

There is another property in the blood, by which any considerable inflammation may be discovered.—If it is greatly inflamed, the coagulable lymph is more fluid than in an healthy state, and longer in coagulating: by which the red particles with which it is mixed, being the heaviest, gravitate; leaving the buff coagulable lymph at the top. Thus after it has stood an hour or two, and a separation has taken place, instead of its being divided into only two parts, the coagulable red part, and the liquid serum, there will be three, by the coagulable parts dividing into two, the red coagulating at the bottom, and the buff coagulating at the top. This may be further known by pressing the finger on the surface of that part which appears red, without being discoloured or tinged: this is the general

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\* Since the late discoveries, this property of the blood is still further confirmed by very curious experiments on its coagulability &c.

ral standard, by which inflammation is known on examining the blood after bleeding.



## STRUCTURE AND FUNCTIONS OF THE HEART AND BLOOD VESSELS.

THE heart is a muscular body, and is the source of the circulation, or rather the medium to unite the functions of the arterial and venous system.

It is divided into two sides, each performing a separate circulation. At the base on the left side, is the auricle which receives the blood from the lungs, from whence it passes into a strong muscular cavity towards the apex, termed the left ventricle, which contracting, propels it with a considerable impetus into a large artery called the Aorta, which supplies the various parts of the body to the extremities ; from whence it is brought back by innumerable corresponding veins, which unite into two large ones, called the Cava, and enter the auricle on the opposite side ; then passing into a corresponding ventricle, it is strongly propelled through the lungs, from which being taken up, it is returned by eight veins\* to the right auricle as at first described.

Thus the left side receives the blood from the lungs, and propels it through a large artery on the same side, by which every part of the body is supplied ; after which it is returned to the left side of the heart, where it is received and propelled to the lungs, in the same manner as the left side received it to supply the rest of the body.

The two sets of blood-vessels employed in the circulation of the blood, are arteries which convey the

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\* In the human subject it is returned by four only.

the blood from the heart ; and the veins which are occupied to bring it back.

Arteries are cylindrical within, and from their decreasing in circumference as they remove from the heart, they are also conical.

There are but two arteries proceeding immediately from the heart ; the rest are but branches dependent.

The first, rises in a curve directly from the left side of the heart, and sends off two branches to supply the head ; other branches are detached to the fore legs, and as it proceeds along the body it supplies the contents and surrounding parts, as the stomach, intestines, bladder, spine, ribs &c. with other branches ; till the trunk itself, as it approaches the extremity of the body, divides, and terminates in the hind-legs.

They have various modes of terminating : as in glands for the purpose of secretion ; the exhalents, or perspirable vessels &c. but their most common mode, is in corresponding veins which receive the blood, and bring it back in the same track as the arteries : till all of them uniting into two large vessels called the Cava, enter the right side of the heart.

It will be observed, as the functions of arteries and veins differ, so does their structure and local situation. The arteries are deeper seated than the veins, and generally run immediately under them, for many purposes ; one of which is their being better protected, as a wound in an artery, is attended with great danger, which is not the case with a vein ; and great force being necessary to propel the blood thro' the arteries from a large cavity in-



to smaller, their structure is therefore stronger, in opposition to the veins, in which the blood finds no resistance, being received in small vessels and flowing gradually into larger. There are likewise in veins a number of valves, which are required to prevent the blood gravitating back: as in the legs the blood has to ascend in a perpendicular column, to facilitate which, a great number of valves or little doors exist in the veins, which yield to the impulse of the blood, but immediately falling back prevent its return.

It must be remarked, that the blood in its arterial course, has supplied all the secretions in the body; as irritability to the fibre, bile to the liver, mucous to membranes, horny matter to the hoof, urine to the kidneys, perspirable matter to the skin &c. it must therefore return in a very exhausted state; to remedy which, when the larger veins enter the right side of the heart, previous to passing to the opposite side into the left artery it has another passage to perform, in order to be recruited and have its lost powers restored.

This is effected by the second artery, which takes its rise from the right side of the heart, and conveys the exhausted blood into the lungs, where it receives a fresh degree of energy from the oxygene it imbibes, and is then taken to the left side of the heart, to again perform its circuit. \*

Altho' the blood receives by the lungs, a power which revives and stimulates it to again resume its functions,

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Note \* This will be more particularly explained in describing the lungs.

functions, there is still another property required to nourish and support it in quantity, which will be described in the Chapter of absorbents.

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## OF THE STRUCTURE AND FUNCTIONS OF THE LUNGS.

I HAVE introduced the lungs in this section, as one of its principal properties is attached to the circulation.

They occupy the two sides of the chest, and are divided by the heart, which lies between them.

Each lung is composed of innumerable cells of various shapes, but so constructed as to have common sides, and the whole are enveloped in a strong membrane called the pleura.

The air cells in each lung, communicate and uniting, form two large tubes; these tubes again uniting at the upper part of the chest, forms the wind-pipe.

The air is conveyed by the wind-pipe, into these cells; on the surfaces of which, all the extreme ends of the arteries terminate by which economy, the atmospheric air comes in immediate contact with the blood, which imbibing from it, the oxygen or pure vital air, it becomes entirely changed in its properties.

In the chapter on the blood, I mentioned that it returned to the lungs of a purple or claret colour; this changes to a bright scarlet as soon as it meets with the oxygen, and having regained its principles of irritability, and a quantity of latent heat which

which escapes on the disengaging of oxygene, it is taken back to the left side of the heart, which it first supplies with the principles of irritability and the vital heat; each of which is particularly necessary to this organ, as its actions depends on their due proportion, and is increased and decreased accordingly, as is observed in fevers when it is too strongly acted upon.

This principle will account for a great number of phenomena, which could be never accounted for; as the heart suffers the same vicissitude as every other part of the body, when exposed to an excess of either stimulus, or irritability: If the last is too abundant, its action is very much increased, and an ardent fever will be the consequence; if very violent it will either destroy the object, or the heart becoming exhausted by its increased action, a low putrid, or hectic fever will ensue.

The very motion of the heart, is accounted for on this principle. It has been observed to be a large muscular body, and from its extensive cavities which receive the blood, it is evident a much larger surface is exposed to the blood, and of course a much larger quantity of oxygene supplied than comparatively exists in any other part of the body. Thus, when the ventricle of the heart has received the blood, there exists a pause or an inactive moment, to imbibe the principles of irritability from the blood, which is no sooner attained, than it is acted, upon by the stimulus of heat, assisted perhaps by distention, and it directly contracts and propels the blood with great violence through the system; a  
partial



partial exhaustion taking place, and having nothing farther to contract upon, it dilates and a fresh quantity of blood rushes in; which having again supplied the heart with the requisite property, it again contracts, and thus acts and re-acts during life.

Its velocity or motion is accurately known by the pulse, as the same impetus is felt at the same instant in every artery in the body.

In young animals, the heart acts much quicker than in old ones, from this principle, and which is explained in the chapter on general diseases, that infants being, much more irritable than adults, the heart is consequently affected by a less degree of stimulus than in age, when the irritability of the system is much decreased.\*

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#### OF THE ABSORBENTS.

THEY are divided into two sets; those on the surface of the bowels, which are occupied to absorb chyle from the food, and convey it to the blood, are termed lactuals, from the resemblance which chyle bears to milk. The rest which are employed over every other part of the body are termed lymphatics.

The first, cover the whole surface of the bowels, and may be frequently seen in the small intestines of a horse, which has expired shortly after eating.  
In

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Note \* The pulse of a horse, of middling age and in health is generally about forty, but in a Colt it will be 50 and upwards.

In their texture they are transparent, very strong, and full of valves, for the purpose as explained in describing the veins.

In their course from the bowels, they unite and enter a great number of glands, where, it is supposed, their contents receive some change, rendering it more fit to unite with the blood in the circulation; after which they pass on and uniting, form a tube called the thoracic duct. This duct passing up the breast, empties itself in the left jugular vein,\* just before it discharges into the vena cava; which last vessel I before mentioned enters the right auricle of the heart, having brought back the exhausted fluid to be circulated through the lungs. Here the chyle assimilates, and becomes organised, if I may use the expression, into blood, by the new properties which it acquires in the lungs: Thus the blood is continually supplied and nourished in quantity by the absorbents; while it is continually receiving vital heat, and irritability or the principle of life, from the lungs.

This supply is still further increased, by the additions which it receives from the second set of absorbents, termed lymphatics; and are employed through every part of the body, to carry off the wasting particles, and redundancy; as muscular flesh, fat, fluids, bones, &c. This will be perhaps illustrated, and rendered more familiar by taking it in the following view. Every one will allow, that we cannot have a particle existing in our system at present

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\* The Veins which runs down the sides of the neck and which are commonly opened in bleeding.

sent, which was there a few years past ; for every part of the body is continually wearing away from the abrasion of the fibres &c. even in the most inactive life. The wasted particles are conveyed from the body by the lymphatics ; while there is a supply or fresh deposit of matter, in exact proportion by the arteries ; except when the animal is growing, the deposit, being then more than the waste. By this process, in a few years, there is a total change in both solids and fluids : also during any disease, in which the blood is not supported by food, the lymphatics are employed to imbibe the oily particles of fat, which they convey to the blood for its nourishment.

There are many peculiarities in these Vessels which are not accounted for. The chyle taken up by the lacteals of one animal, differs not in the least from the chyle of another, even if one has been always fed with flesh, and the other with vegetables ; which has given rise to many opinions concerning the power by which they absorb. It was formerly thought to be from capillary attraction ; but this cannot be the case, for if it acted on this principle, it would alike absorb every thin fluid, whatever might be its quality ; and it is found that bile &c. which is copious throughout the intestines, is never found in these vessels : for example, Loaf Sugar acts by capillary attraction, for if it is held over, and just touching the surface of a thin fluid of any property, it absorbs it, and the fluid ascends considerably higher than its own surface ; which proceeds from the capillary structure of the Sugar.

To account for this peculiar distinction, it is supposed



posed that the lacteals have muscular mouths, which are affected by certain qualities : consequently they will contract on heterogeneous fluids, and absorb those which are homogeneous.

It is also imagined that they take their rise from arteries, as frequently on injecting of arteries in glands, where these vessels are numerous, the absorbents will also be filled ; and Mr. Coleman mentions it as no very uncommon circumstance, to find blood in the thoracic duct of a horse.\*

Thus having finished the outlines of the circulation, I shall proceed to the diseases of the respective parts.

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#### DISEASES OF ARTERIES AND VEINS.

THE arteries are liable to few diseases, unless we admit of fever, cold &c. where the natural secretions being obstructed, the quantity, or quality of the blood becomes affected, and the arteries suffer in consequence, as blood is their natural stimulus : but these complaints will appear better under their respective heads.

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\* A number of very ingenious experiments have been made, to prove, that these vessels have the power to decompose fluids, when they are received into the bowels, and the airs of which the fluid is composed, are circulated by these vessels, and again recomposed into fluids or solids of other properties. If so, the bowels act on a similar principle with the lungs, with this difference, that the lungs supply only oxygen to the blood, and a small quantity of water which we breathe; while the  
bowels

There is a disease which sometimes occurs, though not frequent; which is, a distention of the aorta near the heart, forming a kind of bag, which in the course of time, on the animal being severely exercised, will burst and occasion instant death.

Horses dying immediately after running, is generally from a rupture of this vessel. It is likewise asserted, that this artery is liable to become ossified or horny in old horses; but these complaints are all of them out of the reach of remedy or even palliation.

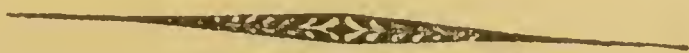
If a rusty lancet is employed in bleeding; if after bleeding the orifice is improperly closed, or the pin left in too long; tumours without much inflammation, are very apt to form along the course of the vein: these will generally disappear, by fomentations of vinegar, in which Crude Salt of Armoniac has been dissolved in the proportion of a dram to a pint. Spirits of Wine camphired, or Soap Linament will also frequently succeed.

If however these applications are found of no effect, the actual cautery or firing may be tried; or a skilful Farrier may lay open the skin over the vein.

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bowels, by the same mechanical power, decompose the fluids; which we receive in the form of nourishment, and their eariform fluids combining in other proportions, compose other fluids requisite for the animal system. I must confess that I give greatly into this opinion, as it corresponds with the operations of nature as far as they are known: Vegetables, oil, and other nutritious productions, are but a variety in the combination of elastic fluids; which principle is not only found to exist in the vegetable world, but likewise in the animal. Putrefaction is but the decomposition of animal or vegetable substance, yielding its materials in their original form to be again occupied in the works of nature: consequently every solid or fluid in the body, is but a variety in the affinity and combination of the fluids.

vein on each side of the tumour, and with a needle tie up the vein altogether; by which it will be obliterated, and the corresponding branches will increase in diameter, equal to the bulk of the lost vein; by which œconomy the circulation will not be affected.



## DISEASES OF THE LUNGS.

INFLAMMATION of the lungs frequently follows an increased action of the heart; and although it has the appearance of a local disease, I imagine it to be the effects of a general predisposition. This opinion is supported by the animal being much more liable to this disease, on being removed from a cold to a warm atmosphere, than from a warm one to a cold, as is generally supposed. After a long continuance of rain succeeded by intense heat, I should imagine a horse more liable to it, than at any other time. Another argument in support of its being a general disease, is, that almost invariably, it commences by an increased action in the heart, which in its first attack is a general fever, but in the course of a few hours, the lungs become the immediate seat of disease.

The more remote causes are accounted for in the following manner. In the chapter of general diseases, it was observed, that heat was one of the most considerable stimulants employed to act on the accumulating irritability of the system; consequently, on a diminution of this power, as in cold or rainy weather, an increased accumulation of irritability



tability is the result; and this state of the body is very severely acted on by a small degree of stimulus, as before explained. Thus after long rains or cold weather, the return of the stimulus of heat, acts in a very powerful manner, increasing the action throughout the system, and a general inflammation is the result; which is first observed, by the pulse being tight and cordy, from the coats of the Arteries being strongly irritated; and the frequency implies the same state in the heart, which is excited to action before the ventricle is filled.

In the horse, this state can last but a few hours, from the very strong muscular power of the heart and arteries; which in this animal exists in a considerable more extensive proportion, than in the human subject; and the lungs lying so immediately contiguous, and supplied so conspicuously with arteries, it soon becomes the chief seat of disease which is found to be the case on examining the lungs after death: if the animal dies of what Farriers term fever, the lungs will be generally found in a state of very great inflammation, and frequently mortified; while the heart will discover conspicuous marks of inflammation on the right side which supplies the lungs with blood.

The symptoms are a hot dry breath and heaving of the flanks; the animal hangs his head, and never lies down, generally standing with his fore legs wide to expand and relieve his oppressed chest. The pulse at first will feel tight and quick, but soon becomes very much oppressed.

If relief is not afforded on the first attack, success must not be expected. The moment this disease is discovered

discovered, five or six quarts of blood should be taken from a very large orifice, and repeated if necessary in ten or twelve hours, as a cure can be only expected from the most powerful remedies : frequently after bleeding the pulse becomes stronger, from the distention being removed.

A rowell may be made under the chest, and Turpentine may be used to foment the Abdomen and fettock Joints to attract the blood to the extremities ; and for the same purpose ligatures may be tied round the legs to prevent the return of blood : diuretics may be also employed to determine the blood to the kidneys. Mr. Coleman has procured a superficial inflammation under the chest, in which he has found very great success, by making an incision through the skin and inflating it with air, and if an Inflammation was not produced, he injected Spirits of Turpentine.

It may be enquired why stimulants are employed in a disease, where the stimulus is already too strong ? It is to be remarked that the stimuli recommended, are generally local, to attract as much blood as possible from the diseased part ; while the general stimulus is lowered by bleeding ; and all medicines which act on a general scale of excitement, as cordials or purgatives, are absolutely forbid ; and altho diuretics may in a small degree increase the general stimulus ; yet the good effects are more conspicuous, from the quantity of blood attracted to the kidneys.

The pleura, is a membrane which covers the lungs, and lines the cavity of the chest, an inflammation of this membrane is treated by authors as a separate disease ; but as the cause, symptoms, and



and cure, are precisely the same as in an inflammation of the lungs, it needs no further explanation.

Another disease to which the lungs are subject, is an obstruction of the air cells, generally termed thick wind. It frequently takes place after some slight inflammation, or violent exercise, by which a quantity of coagulable lymph, is forced from the small mouths of the arteries terminating on the surface of the air cells, which coagulating, prevents the admission of air; and if this obstruction is of an extensive nature, the lungs will have the appearance of schirrhus.

The symptoms of this complaint are so common that a mistake can seldom exist. One of the principles which distinguishes it from a broken wind, is an equal difficulty in inhaling and exhaling the breath, which is not the case in broken wind.

If this complaint is attended to in its recent state, a cure may be expected, which is very difficult after it has continued some time. If the horse is in full condition, take four or five quarts of blood from a large orifice, which may be followed by a purge to empty the intestinal canal; this will relieve the diaphragm or mid-riff from the pressure, and thereby afford more room for the obstructed lungs; and to assist this point, his food should be lessened in quantity and increased in quality. His water must be given in small quantities, not exceeding a gallon at one time, but may be repeated three, or even four times a day if necessary, as the course of medicine recommended, may perhaps increase the animals thirst.

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Note \* When the Pleura is inflamed, the pain is generally more violent, and if confined to one part, the animal will point his head to the



The phyfic may be as follows.

Take of Aloes one Ounce,  
Calomel one Dram,  
Oil of anniseed or mint twenty drops.  
Soft soap sufficient to soften it to a mass.

If this medicine does not operate in forty eight hours, it may be repeated : after its operation, one of the following bolusses may be given twice a day for a month or six weeks.

Take of Gun ammoniacum twelve Ounces.  
Myrrh four Ounces.  
Powder of Squills one Ounce.  
Vinegar of Squills or Turpentine sufficient to soften to a mass and divide into twenty-four bolusses.

If Gum ammoniacum or Myrrh cannot be procured, yellow Resin may be employed as a substitute.

The animal should not be exposed to any current of air, and his exercise should be particularly attended to. At the commencement, gentle exercise twice a day may suffice ; till a brisk gallop morning and evening will be necessary, if the lungs are not found to be too much oppressed.

If the obstructions are not removed, the lymph will sometimes accumulate and burst the cells ; this rupture of air vessels, will also proceed from violent exercise, in which the lungs are so much exerted as to rupture their air vessels, which decreasing in number, encrease in magnitude. In inspiration the air finding no resistance, rushes into, and fills

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Diseased side and shew signs of great pain, whilst an inflammation of the lungs distresses the animal more from oppression than acute pain.

fills the lungs in an instant, but the œconomy of these cells being destroyed, there is not that equal pressure in exhaling, and the animal is therefore very considerably longer in expelling it, than in the sound state; while in thick wind the air enters the obstructed cells with difficulty, and is with the same difficulty expelled.

A rupture of these cells is better known by the term broken wind.

The only palliation this disease is capable of receiving, must be confined to the diet as recommended in an obstruction or thick wind. If the animal could be kept on a pasture land, he would be less affected than at his Picquets on dry food.

#### DISEASES OF THE ABSORBENTS.

FARCY, is an inflammation of those lymphatics which lay near the surface of the skin, and seldom affects those which are deep seated. It is generally observed first, in the hollow of the thighs, being the parts where these vessels are most numerous, from thence it extends to any other part of the body, and when it reaches the head, it becomes more virulent and takes the name of glanders.

The remote cause I imagine must be debility, from the tonic system which relieves it. When it is first observed, there is an inflammation of the vessels, which appear like small red buds, and frequently branch in bunches or clusters which are very sore: they afterwards suppurate, and become ulcers, which affording a considerable quantity of matter, is absorbed in the system and produces similar



milar ulcers in other parts : the nose and lips will frequently swell, and become very painful, from the numerous small absorbents in those parts, which also become inflamed.

It is possible a loss of tone in those vessels, is the first process towards this disease ; obstruction is the consequence of debility, and inflammation is the effect of obstruction. This last is probably the state they are observed in, when they assume the form of red pimples, after which the obstructed fluid corrupts and produces the same effect on the contiguous parts, and they become ulcers : the small intervals between each valve, are the spots first inflamed, which accounts for their appearing in bunches.

What supports this opinion is, the animal being more liable to this disease after long and severe exercise, or an active campaign ; while it seldom attacks horses that are kept in regular exercise. During violent exertion for any length of time, the action of the vessels is increased throughout the system, and always after encreased action, a proportional debility ensues : during action, these vessels are particularly affected by the muscular friction, and if this continues for a length of time, particularly if the animal be of a lax habit, the vessels loose their tone, and they can no longer propel the fluid they circulate, and obstruction &c. ensues.

The contagious power of this disease, I believe is not at all accounted for. Whether these ulcers are of a putrid kind, which is very probable, or whether contagion is a property of Ulcers of the lymphatics, is not known ; but I believe the contagion, is far from being so powerful as is generally imagined.



I must here remark, that many cases which are termed farcy by the Natives, are merely small superficial pustules, or ulcers proceeding from poverty of blood, and by no means seated in the lymphatics. They are generally the result of an impoverished treatment, which is their usual mode of treating almost every disease, and as the major part of diseases arise from poverty of blood, it should not excite our surprize, if nasty low, itchy ulcers follow ; which are best removed by stimulant applications, and a nourishing cordial diet with regular exercise.

In the Section on general diseases, it was remarked, that when stimulants had been used to excess, debility and langour was the consequence, and a still stronger stimulus was required to rouse the languid powers : Thus, farcy being the immediate effect of exhaustion, a very diffusible, stimulating plan of cure must be employed.

The ulcers may be fired with a hot iron, which will increase the action of the absorbents in the corresponding branches to carry off the obstructed fluid. In this country, I have never known the following application to fail. Take of Oil of Vitriol one part, of Turpentine and Tar each two parts, with which the spots may be touched twice a day, and if ulcers exist, Tow may be dipped in the mixture and pressed pretty forcibly into them, and left till they drop out : Or the following solution may be used. Take of corrosive sublimate of Mercury finely powdered one dram, spirits of Wine sufficient to dissolve it, then add, of Turpentine and Water each half a pint—A strong exciting course of medicine, should also be employed internally.

nally. Horses in high condition, with a loaded circulation and leading an inactive life, will be also liable to this disease: The cure is however similar—A loaded circulation, oppressing and exhausting the heart and vessels, produces general debility equal to over exercise, the only difference required in the treatment, will be, that in cases proceeding from inactivity, and oppressed circulation, the animal should lose from four to five quarts of blood, and a purge may succeed it; the quantity of his food may be rather lessened, but by no means in quality; after which, his treatment may be, both as to external and internal applications, the same as in the Farcy of the first description.

One of the following exciting Bolusses may be given every four days.

Take of Yellow Resin Twelve Ounces.

Venice Turpentine Four Ounces.

Camphire Three Ounces.

Spirits of Turpentine or Brandy sufficient to make into a mass, which divide into twelve bolusses.

In the intervening days, one of the following tonic bolusses may be given morning and night.

Take of Opium Two Ounces.

Camphire One Ounce.

Blue Vitriol, half an Ounce.

Oil of Anniseed or Mint ditto.

Soft Soap sufficient to reduce to amass, which divide into twelve bolusses.

His exercise should be particularly attended to, and must be regulated according to the strength of the



the animal, and what he has been accustomed to : If in high condition, trotting exercise three or four miles twice a day will be useful ; If poor and low, a shorter distance of walking exercise will suffice.

This disease frequently terminates in what is called a chronic farcy, which is very favourable and very frequent in this country : The animal will perform his work and enjoy his health as usual, without any danger of communicating it by infection. The only remains, will be a hardness about the parts that have been affected, conspicuous to the touch, but scarcely perceptible to the eye.

If however the disease should predominate (which I have never known in this country if treated as above) it will frequently terminate in glanders ; but as this is also frequently mistaken, I shall treat it as a separate disease ; previous to which, I shall describe a very common disease or complaint, known by the name of water farcy, in opposition to the former, which is termed farcy bud.

The water farcy, generally pursues the same course as the former, making its first appearance in the course of the absorbents along the abdomen, and down the thighs.

I have reason to believe that this disease is precisely the same as the former as to remote causes, differing only perhaps in one effect. The lymphatics obstruct and rupture in the farcy bud ; while in the water farcy a total debility prevails, and they are deprived of the power of taking up the deposited fluid, and an accumulation or partial dropfy ensues, which is observed in the tumours which become of considerable extent, and contain



contain a colourless fluid as in dropsy.

This disease is removed by the same mode of treatment recommended in the former, with this exception ; that bleeding must on no account be permitted, and if the Animal is in condition, a brisk dose of Physick may be substituted \* as

Aloes eight Drams,  
Calomel one Dram and a half,  
Oil of Mint or Anniseed thirty drops.  
Syrup or soft Soap sufficient to form into a Bolus.

The external applications must also be more fluid, as in this case, there is seldom any open sores : with this intention any of the following Liniments may be applied once or twice a day.

Take of Spanish flies powdered one Ounce.

Spirits of Turpentine one pint mix for use  
or

Spirits of Wine one pint,  
Campher one ounce,  
Corrosive sublimate of Mercury one dram  
mix for use.

or

Europe Vinegar one pint.  
White Vitriol and crude Salt of Armoniac of  
each half an ounce—dissolve them.

GLANDERS

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\* I believe that sudden transitions in the climate, may also produce this disease. By accounts I have received from a Regiment of Cavalry, in Bengal, I am informed that the rainy season, is generally attended with a dozen or more farcied subjects. Great inconvenience is also stated to arise, from the innumerable flies attacking the sores ; but this I should imagine would be done away by covering the ulcers with the ointment recommended in the farcy bud.

GLANDERS is supposed to be the same complaint as the farcy, but attacking a part of greater consequence, from the contiguity of membranes and bones, as in the head.

What led to this opinion, was the frequent termination of one disease in the other. This has been still further supported by inoculating a sound horse, with the matter taken from the ulcer of a farcied animal, and the result was Glanders. but it is remarkable, that the only part of the animal which would receive the infection, is the nostrils, where the matter must be introduced: it is perhaps from this peculiarity, that glanders is produced; this will also prove that farcy is not so contagious as supposed. Another argument in favour of these diseases arising from the same proximate cause, is the result of a very common experiment at the Veterinary College, of introducing or inoculating the blood of a farcied horse, into the circulation of a sound one, and glanders is very speedily produced. It therefore appears, that the matter from ulcers of the absorbents is peculiar and affects only absorbents. Thus in a long continued and occult farcy, the matter is absorbed into the system, and the absorbents of the head become affected, and glanders is produced; and if farcied blood be introduced into the circulation of a sound horse, the absorbents of the membrane lining the nostrils, being more irritable than those on the surface of the skin, they become first diseased.

Very fortunately this inveterate malady is not so frequent in this climate as in England. This variation may be occasioned in some measure by the mildness of this climate compared to that of England.

gland



gland; also from the irritable membrane of the nostrils, not being in this Country exposed to the saline and acrid exhalations arising from confined and foul stables.

It also frequently arises from tedious glandular swellings of the throat, improperly treated; also from inflammations of the membranes of the nostrils and wind-pipe from cold. &c,

It may be first discovered, by the edge of the nostrils being tight, contracted, and giving the animal great pain when handled. the membrane lining the nostrils, will be much inflamed, and generally covered with small ulcers. The glands under the throat swell, the eyes will frequently appear full, a very foetid matter will discharge from the nostrils, and the whole head appears diseased. In other points, the animal may enjoy good health for considerable time, his appetite and condition will be good, and he performs his work without distress, great care is however particularly necessary, if the contagion proceeding from this disease is found to be very inveterate and diffusible.

He should be picketed a considerable distance from other Horses, and never in such a situation, that his grafs may be blown by the wind to others, the smallest particles of matter, existing on grafs, which he has slightly breathed on, will produce infection.

If the Horse is of little value, it would certainly be most prudent to destroy him; but if he is a favorite animal, and as a cure is sometimes performed when taken in a recent state, I shall advise that treatment, which is most probable to succeed.

Hot fomentations round his throat may be used  
twice



twice a day of Mergosia leaves in boiling Water or of hot Vinegar, in which crude salt of Armoniac has been dissolved, in the proportion of one dram to a pint.

The following may also be used once or twice a day, placed in such a manner as to act as a vapour bath to his head.

Take of boiling Vinegar one pint, a small bunch of Rosemary, or five or six drops of its essential oil, mix and place it under his head that he may receive the vapour.

The nostrils should be frequently washed, and the ulcers touched by a feather dipped in the following.

Take of Vinegar two table spoons full,  
Honey one table spoon full,  
Tincture of Myrrh one ditto. Mix &c.

If the animal's condition will allow, four quarts of blood may be taken from him, and the same course of stimulant and tonic Bolusses is recommended as in the farcy.

If the disease does not give way in two or three months, the matter will probably have extended from the membrane to the bones, and produce rotten ulcers which are incurable.



## SECTION IV.

*OF THE BRAIN AND NERVES.*

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THE Brain is divided into two parts, the cerebrum which is inferior in the horse, and the cerebellum superior. It is also composed of two different substances, the external called cortical, is of a grey colour and dense ; while the interior is white, soft, and termed medulla.

The superior part of the brain called cerebellum, is continued down the back bone, and takes the name of spinal marrow, which supplies with nerves the greatest part of the trunk of the body and inferior extremities ; while the inferior part of the brain called cerebrum, furnishes the head, neck, and part of the breast.

Nerves are small bundles of cylindrical tubes terminating in every sensible part of the body, the functions of which, are to produce motion and convey sensation to the brain, from which they all originate. I believe the cerebrum as in the human subject furnishes ten pair of nerves, which supply the head, as the optics which convey the sense of vision, the olfactory the sense of smell, others the sense of hearing, taste &c. branches are also supplied to the wind-pipe, throat, heart, and breast, and which from their frequent communication, produce  
that



that sympathy which is observed: for example, acrid substances received by the nose will produce sneezing which is an affection of the chest, and is in consequence of the same nerve which supplies the nostrils, also sending branches to the mid-ribs. They usually accompany the blood vessels and spread over the most minute part of the body.

The spinal marrow I believe produces thirty pair of nerves as in the human subject, for the supply of sensation and motion to the trunk of the body and inferior extremities.

The mode by which sensation is conveyed from the various parts of the body to the brain, with such inconceivable rapidity has excited the astonishment and afforded much speculation, to the Philosophers of every age. Some imagined it to be the effects of vibration, as their course is straighter than the blood vessels, others with more propriety attributed it to their circulating some very subtle fluid, which by experiments that have been since made, is I believe pretty well attested; yet many difficulties exist, as no cavities have been discovered by the finest glasses. It is possible the larger animals as the camel or elephant possessing larger nerves might afford an easier scope for investigating this point, although I think it very probable that nerves may circulate or conduct a subtle fluid without possessing cavities.

The recent discovery of elastic fluids has thrown some light on this wonderful property of nerves and may possibly lead to more satisfactory explanations. I before mentioned that some curious experiments had proved they circulated a fluid, (vide Cheseldon's



Chefelden's Anatomy) which fluid, must be the medium of that wonderful and inconceivable velocity, by which sensation is conveyed to the brain, as is observed when any substance is touched by the extremities, at the same instant the impulse is received on the brain. Nothing but the electric fluid is known, that could possibly possess this rapid conveyance, which opinion is rendered still more plausible, by that celebrated and indefatigable Anatomist Mr. John Hunter, who discovered that the torpedo \* derives its power from the nerves being very numerous, and distributed principally on the surface of the body.

Still further experiments have been proved to illustrate this very interesting theory. Professor Galvani of Bologna has discovered a certain influence or connection between the loadstone and the animal fibre. D. Girtaner imagined the nervous fluid to be inflammable air : his words are " reflecting upon the result of several of my experiments, I begin to suppose that hydrogene air, which remains after the oxygene of the water is united to the irritable fibre, may serve to supply the loss of nervous fluid, or in other words, I suppose that the nervous fluid is the hydrogene air, perhaps carbonic hydrogene gas. I confess this is only a conjecture which I am not yet able to prove, but which appears to me very probable. Be this however as it may, it is very certain, that water is decomposed, and recomposed continually in organized bodies : This is clear from experiments I shall hereafter

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\* A fish possessed of the power of electrifying when touched.

hereafter enumerate." Another property similar to that of Galvinism (perhaps the same) is discovered, or asserted to be so, by Perkins of America, who pretends that a certain metallic composition has a considerable influence on the animal frame, and removes superficial inflammations. I have, had an opportunity of seeing and examining several persons, who have been the subjects of these "metallic tractors," and am in consequence, inclined to believe it possible, they may have some virtue.—I must however acknowledge, that Perkins affords ample scope for prejudice, in making the requisite combination of metals (if a combination is requisite) a secret or nostrum.

It would thus appear that the nerves circulate a certain subtle fluid, very much resembling (and is perhaps) the electric, which, if proved, will account for the velocity by which sensation is conveyed.—The principles of fire, light, electricity, the magnetic and nervous fluid, are but little known—Future observations and researches may perhaps prove them, but various combinations or modifications of the same principle.

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LOCKED JAW.

THE nerves in the horse are subject to a dangerous disease termed locked jaw, improperly so called, as it is only a local symptom; while the disease is general. Conceiving the Jaws to be the chief seat of disease, it was supposed that death occurred from want of nourishment; but this is not the case: the animal positively dies from morbid irritation,



or an encreased action of the nerves exhausting the system.

It is more frequent in hot climates than in cold. It sometimes succeeds violent exercise, slight wounds in a bad habit, or which have been negligently treated, particularly if punctured wounds; also after operations, even when every thing appears doing well, and it frequently attacks without any visible predisposing cause. The pricking of a shoe nail will frequently be attended with loss of appetite and a rough coat, which if not timely remedied, is sometimes succeeded by a locked jaw.

The general symptoms, are an encreased irritability of the senses, as sight, hearing, smell, &c. The muscles of the whole body are contracted, the head is drawn back, pointing his nose upwards, his flanks shrink up almost to the spine, the eyes are drawn within their sockets, the pulse is quick, and the jaw more or less locked. Internally these symptoms are reversed, for in the stomach and bowels there is scarce any irritability left, consequently the action of medicine will be proportionably less.

Relief is seldom procured in this disease, and the only probability of it, must depend on stimuli internally employed. Mr. Coleman thinks it proceeds from encreased irritation, and mentions his having made trial of almost every medicine, and in Opium alone, he has sometimes succeeded. If encreased irritability is the cause, Opium should first be administered in small doses, and gradually encreased as follows. Take two drams of opium, dissolve it in half a pint of hot water, and pour it down his throat by means of a horn. This should be repeated every four hours, doubling the quantity



tiy of Opium each time, till the dose contains an ounce, and this should be continued until symptoms of relaxation in the system appeared. Clysters may also be injected of the following,

Take of Camphire two drams, triturate it in a mortar with about a table spoonful of Sugar, then add of boiling water gradually two pints, and Tincture of Opium four ounces. This may be injected, when the before mentioned draught is given, first adding two quarts of cold water to give more bulk to the clyster.

The quantity of Opium recommended may appear very great; but when it is considered that the stomach and intestines have nearly lost their sensation, very violent and penetrating ingredients will have but little effect; and, as our only hope is in Opium, and as even Opium does not always make an impression on the system, it must be obvious, that an extensive form, is alone likely to succeed. Heat is prejudicial, the animal should be therefore kept in a cool place and without clothes.

He seldom survives more than two or three days in this state, as the brain becomes exhausted.

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#### SLEEPY STAGGERS OR APOPLEXY.

The brain is also subject to a disease which the Farriers term staggers, and which assumes two very opposite appearances. One is termed the mad, and the other the sleepy staggers.

I imagine the sleepy staggers, to be a species of apoplexy, and relieved accordingly. The oppression  
on

on the brain threatening immediate death, will be relieved by copious bleeding from a very large orifice. Purgatives should be also administered with pretty strong clysters, and ligatures round the legs will keep the blood in the extremities, and thus divert it from the head. The symptoms are so striking that few can mistake it. The animal appears sleepy, hangs his head without the power of keeping his eyes open, is perfectly indifferent to every object about him, and frequently falls to the ground apparently insensible.



#### MAD STAGGERS OR INFLAMMATION OF THE BRAIN.

The mad staggers of which I have seen two instances, in this country, is, I think, similar to the phrenites, or inflammation of the brain in the human subject, and is relieved by a similar treatment.

It is generally produced by spasms or gripes in the intestines, foul feeding causing an accumulation of dirt or fæces which obstructs the bowels, and obstruction in the bowels by pressing on the veins, impedes the return of blood from the brain; and if the habit is irritable, inflammation will ensue. The two cases I have witnessed in Camp,\* were evidently caused by gripes, which not being timely relieved, produced the mad staggers, which is known

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\* These Horses were not in the 25th Regiment, nor brought to me until they were in the above situation, which I was informed had succeeded the Gripes. In one a passage through the Intestines was procured in about twenty hours and the Animal recovered; in the other no passage being effected, he died.



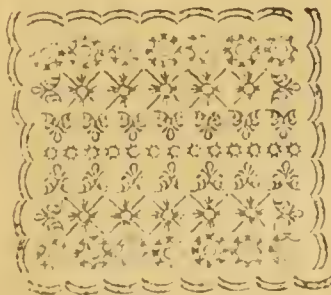
known by the animal's being very restless and in continual motion. If at his pickets, he is always moving his legs and his head, expressing more uneasiness than direct pain. If he is taken from his pickets, he runs round, nor ever stops unless he falls.

The mode of cure in this disease is very similar to the former, only being more particular as to procuring a discharge by the bowels. At the commencement five or six quarts of blood may be taken from a large orifice; at the same time, a very powerful purgative should be administered, composed of one ounce and a half of Aloes, and two or three drams of Calomel, which may be repeated in twelve or fourteen hours if it does not operate; and to accelerate the operation of the physick, strong clysters should be employed every five or six hours, each clyster containing two ounces of Aloes dissolved in three or four quarts of hot water, with fifty or sixty drops of the Essence, or Oil of Peppermint. If the animal is not relieved in fourteen or fifteen hours, the bleeding should be repeated.

The course of physick here recommended, may be thought severe, but when it is considered that the disease will soon destroy the animal if relief is not quickly procured, and that the cure, as in the human subject, entirely depends on a free passage through the intestines, the propriety of such treatment must be acknowledged.

This disease, I conceive is much more frequent in this country, than is generally imagined, as it is so frequently the consequence of obstruction in the bowels; and the animal is here very subject to great accumulations of gravel, sand, dirt &c. from

from the foulness of his forage. I have frequently seen a horse discharge ten or twelve pounds of gravelly substance, when under the influence of physick. Unfortunately the Salsitry having no knowledge of this disease, the animal is left to die, which he generally does in the course of twenty four hours—thus I believe many valuable horses are lost, without the least assistance being afforded them.





## SECTION V.

*OF INFLAMMATION, ABSCESS, ULCER,  
MANGE, STRAINS, WINDGALLS  
RHEUMATISM, SORE BACK,  
POLL EVIL, SPAVINS,  
SPLENTS, &c.*

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**I**NFLAMMATION in the horse; arises perhaps from various causes; but that to which I principally confine myself in this Chapter, is external inflammation arising from blows, strains, friction, or any other accident. In this case the vessels of the part, having lost much of their tone and strength, they become incapable of circulating the now oppressing fluid. Hence, in slight inflammations, it will evidently appear, the mode of relief must arise from applications of Tonics; as Vinegar, cold spring water, Sugar or extract of Lead, Brandy, &c. thereby encreasing the strength of the relaxed vessels to perform their functions and circulate the redundant fluid. Bleeding is also necessary to allay the impetus of the circulation, that the quantity of blood going to the part may be diminished—this mode is termed, reducing inflammation.

If the inflammation is in a young vigorous animal, very timely assistance must be employed to reduce it, as the confined blood soon corrupts, or rather changes its nature; the red particles perhaps being absorbed, the coagulum  
forms

forms into matter. This event may generally be known by the heat, tension of the skin, and pain diminishing, and the parts rather swell and palpitate beneath the touch. In this case, the reverse treatment must ensue. Instead of continuing to lower the habit by bleeding and low diet, a good warm nourishing one should be substituted. If the animal is very low, cordials may be moderately admitted, and the parts should be kept warmly poulticed, with bran or meal boiled in milk, or warm fomentations of Mango leaves in hot water, and this will in a short time ripen, and render it fit to be opened with a knife. This operation should however never be anticipated, as by opening it too early, it becomes a tedious ill conditioned ulcer, instead of a kind and healthy one. If the abscess should burst of itself, the opening may be a little increased with the knife, pursuing a dependant direction. The time for opening it, may be known by a pointed projection feeling soft, and a fluid undulating beneath the skin: This process is supuration or abscess.

When opened it becomes an ulcer. Yet, every ulcer does not shew these two stages, at least not sufficiently so to be noticed. I shall however first recommend the mode of treating the ulcers arising from the common abscess.

I must here again object to the mode of Farriers, Grooms, Salistries &c. wiping the open wound to the bottom, by which they destroy the tender granulations of new flesh, which nature sprouts forth from the bottom and sides of the wound to fill it up; also depriving the wound of the matter, which so far from being destructive, is nature's richest balsam, which



which is continually forming for the most benevolent purposes---that of forming new parts and vessels, to replace those which are destroyed. The wound also being exposed to the air is much irritated--Yet the balsamic qualities of this fluid, depends very much on the state of the body, which may be known by its consistence and colour; if of a pale yellow, and rather thick, it is healthy; if very thin and greenish, or mix'd with blood, it is the reverse; and if the wound is of consequence, the cure must be sought by constitutional remedies; for no local application will produce good matter if the habit is bad; and it is on the qualities of the matter that the cure is augured.

If the condition of the animal be too high, he may, lose blood, which may be succeeded by a dose of Physic. This ulcer is however much oftener found in horses of ill condition; in which case, bolusses of one dram of Opium, and half a dram of Tartar Emetic, may be given twice a day. Bark may also be administered, but I am fearful the quantity required, will be too great an obstacle, and its operation may not perhaps be so extensive in the horse, as in the human subject. A good diet with gentle exercise twice a day is also proper if the situation of the abscess will admit of it---when healing, the edges, and even the surface of the wound, will frequently grow above the surface of the skin, usually called proud flesh or fungus. This is always a favorable symptom, being merely the luxuriant growth of nature to fill the cavity. These edges may however be reduced, by touching them with a piece of blue stone for two or three days, or by a tight bandage--The best application afterwards, is a piece of

of dry lint next to the wound, over which a plaster of basilicon ointment, or a mild poultice of milk and meal or bread, should be applied warm twice a day.

The next ulcer to which I alluded, is of a putrid, foetid kind, which comes indiscriminately over any part of the animal. It originates from scurf and pimples, which suppurating, become large ulcers, and if not timely relieved, they grow very deep, and become very extensive. This disease is very common in this country, and is always considered by the Salistry as the farcy. This error would however be slight, if they knew how to treat the farcy and acted accordingly.

This disease is generally occasioned by a bad, thin, poor blood. Sometimes it proceeds from bad grooming, or indeed from any cause which can impoverish the system. It is not however farcy; for it appears indiscriminately on any part of the body: neither is it contagious.

Unfortunately in these cases, as in almost every other, the Salistry, which I have witnessed three or four times in the Native Cavalry, commences by firing, diminishing the animal's gram, and every other mode which may reduce him as much as possible; while the ulcers are merely dressed with some simple of little or no effect. The consequence was, in the cases above stated, that death in a short time relieved the tortured animal from further misery. If however, an opposite course is followed, the cure is neither difficult or tedious. Good diet should be allowed, brisk trotting exercise twice a day will be proper if the animal can bear it, and he should be put under a course of the following exciting medicine.

Take of yellow Resin, six ounces.

Venice



Venice Turpentine, sufficient to soften it to a mass, which divide into twelve bolusses, one of which may be given every morning before his exercise.

After these are finished, he may take a dozen of the cordial bolusses of Opium and Tartar Emetic, which will render the cure more permanent. In the meanwhile, the ulcers are to be dressed with the strongest stimulants, as the milder application would not affect them. These ulcers are generally of a dry nature, of a greenish hue, with a rotten putrid appearance, and possess but little sensibility. Blue Vitriol finely powdered may for the first three or four days be sprinkled on their whole surface, and a dressing of Venice Turpentine over it, which will generally produce a discharge and a clean appearance. The Blue Vitriol may now be omitted, and an unguent composed of Tar and Turpentine, of each one ounce, should succeed it, and every time the dressings are taken off, let the wounds be gently washed with the following solution. Take of Corrosive Sublimate in powder one dram, Spirits of Wine, Brandy, or Arrack two table spoons full to dissolve it; after which, add one point of spring water. This treatment may be thought very severe, but I have often been obliged to have recourse even to use Spirits of Turpentine in the place of water, as their surfaces were so very insensible and obstinate. It must also be considered, that the texture of the muscles of a horse, are proportionably strong, and the strongest digestives employed for the human subject, would be but emollients with the horse.

If

If the course here recommended is correctly pursued, I can declare very confidently of its success, as many cases which I have had under my directions, were in every instance perfectly cured in two, three, or four weeks, even when the ulcers were deep, numerous and extensive ; and, if three fourths of the cases supposed to be farcy, were treated according to these directions, I am convinced a horse would very seldom be lost from what is usually termed by that name.

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#### SCURF USUALLY MISTAKEN FOR THE MANGE.

PREVIOUS to my describing the last complaint, I ought to have introduced the scurf, or what is generally called the mange or itch. This state is very frequently the forerunner of the former, and also like the former is thought a dangerous disease, assuming the name of one of the most obstinate and malignant the animal is subject to, Viz. the mange ; which is scarcely ever cured, although much attention has been paid to it.

This scurf, I have almost invariably found to disappear on giving the animal the exciting, and subsequent cordial balls, as recommended in the list kind of ulcers. Exercise is also proper, and the scurf may be washed once a day with the solution of Corrosive Sublimate, as recommended for the ulcers. If this is not found sufficiently strong, four or five ounces of Turpentine may be added. After this solution has been employed two or three weeks, it may be left off, as the hair frequently will not grow till the solution be discontinued.

If



If the animal be in very high condition, a dose or two of physic will be proper, previous to the bolusses.

I have observed in this country, that horses in a very high state will frequently have eruptions or scurf, covered with little watery pimples, occasioning a moisture or discharge. In a case of this kind which was under my direction, the subject was a very valuable Arab in high condition; and the complaint had existed for many months, I believe upwards of a year. Salistries had been employed, and the disease encreased. I ordered a solution of one dram of Blue Vitriol in a pint of water, to wash the parts two or three times in a day.

At the same time, two or three doses of physic were given, of one ounce of Aloes and two drams of Calomel each. The animal in consequence discharged an immense quantity of gravel and sand, perhaps to the weight of twelve or fourteen pounds, and after ten or twelve days, the parts were perfectly dry and the hair again appeared. I heard some months after, that the cure was complete. In this case I suspect the poverty of blood proceeded from the lacteals, (which convey the nourishment from the bowels into the system) being obstructed with the gravel and sand which had accumulated, from the animals eating his grass unwashed.

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POLL EVIL.

THERE is an ulcer to which the animal is subject, which from its situation is dangerous if not properly treated. This is generally termed the poll evil.

evil. It is caused by frictions of the head-straps of the bridle or halter; also from blows on the head. It first inflames and tumefies, and frequently is not discovered until suppuration has taken place, and the abscess bursts. If discovered in the first state of inflammation, it will be removed by the remedies recommended under that head; but if matter has formed, and the abscess is open, it must be dressed with lint, and over it a plaster or dressing of some mild digestive ointment; as Basilicon, and a warm milk poultice over that again may be necessary. If the orifice of the wound is small, it should be opened with a knife in such a manner, as will prevent the confinement of matter; for if healed too soon, or matter is confined, it makes its way down to the bone, where corrupting the membranes the bone becomes rotten, by which the animal is sometimes destroyed.

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## SORE BACK.

ANOTHER part, to which the animal is very subject to be attacked with inflammation, abscess, and ulcer, is the back and withers. They generally arise from too small or too large a saddle &c. The cure of these must depend on the state in which they are first detected; if in the most early stage, the tumefied part may be well rubbed three or four times a day with salt or salt petre dissolved in cold spring water. If matter forms, (which may be discovered by the observations when treating of abscesses) warm emollient poultices may be applied over the part, first rubbing it with some spirit of Turpentine; and



and when the poultices are changed, previous to applying the fresh one, warm fomentations of mango leaves in hot water will assist in advancing it. When ripe it will burst, and the opening may be enlarged by the knife. I have generally found, that the stronger digestives were useful in these ulcers. After the lint is placed on the orifice, a plaster of Basilicon Ointment softened with Turpentine will be proper; and if the ulcers are of long standing, if they have been neglected in the first instance, or have been under the care of Salistries; it will generally be necessary to sprinkle some red Precipitate, or Blue Vitriol finely powdered on the surface and edges for three or four days. They may afterwards be dressed with an equal quantity of Tar and Venice Turpentine, and if this is not found sufficiently strong, the Venice Turpentine alone may be applied; first placing a piece of lint on the surface of the wound. It is the very improper treatment which these sores receive in their first state, which produces what is termed a warble; and which can never take place if the directions above are attended to. A warble is but an ill conditioned abscess, in which repellents have been used in the place of emollents; and such treatment generally produces ill conditioned ulcers, which have been known to penetrate to the spine, and rot the bones: such is frequently the effects of the miserable treatment, to which this animal is subject, from the ignorance of the persons usually employed to relieve him.

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STRAINS.

**STRAINS** in the horse, are generally situated near the ligaments, by which the joints are attached, or  
in

in the surrounding muscles, and but very seldom (perhaps never) in the tendons, which are the parts usually supposed to be the seat of disease. The structure of tendons is such, as renders them very difficult to be inflamed or pained, from their small supply of blood-vessels and nerves; which circumstance renders them almost insensible: they have beside no motion of their own, being dependant on the muscles to which they belong.

A horse seldom strains a joint or the surrounding muscles when animated, as the muscles of voluntary motion are then exerted; and during this state it requires great force to injure them. This is not the case when the animal is careless. For example, when he is moving along a smooth looking road with careless security, if unexpectedly his foot should slip into a deep hole, the muscles are taken by surprise, and the ligament alone not being equal to the weight and exertion of the animal, becomes bruised by the head of the bones, for it is perhaps the muscles more than the ligaments which strengthen the joints: or the muscles in their relaxed state may be with ease strained, which is very difficult when they are exerted: muscles may also be strained by over exertion, as running &c.

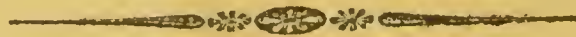
Great circumspection is necessary to ascertain precisely, which part of the leg has received the injury, as I have very frequently observed cases, which have been treated for strains in the shoulder and other parts, when the lameness positively existed in the foot. The place however once ascertained, the principal object must be to reduce the inflammation. We will suppose the shoulder to be affected, blood should be taken as soon as possible



sible, and the parts fomented with mango leaves in hot Water; this should be continued for half an hour twice a day, after which, the part should be rubbed dry previous to tying it up with a piece of dry flannel. If the inflammation does not give way in a few days, I would recommend repeating the bleeding, and fomenting the parts with hot Vinegar, in which has been dissolved some Crude Salt of Ammoniac in about the proportion of a dram to a pint; and if this does not succeed, the whole shoulder should be blistered, the animal put under a course of exciting balls, and a rowel or seton may be made under his chest.

If any other joint is inflamed, it should be treated after the same mode.

Inflammation in the back part of the leg usually termed the back sinews, frequently leaves an accumulation of coagulable lymph, which becomes very hard and incommodes the action of the animal, by which his paces are insecure, and on exertion, liable to become again inflamed. In these cases, I have generally found the greatest benefit arising from very strong Mercurial Ointment rubbed in until it is absorbed, twice a day. This should be continued for three or four weeks, after which the leg may be tied up for a few days with a bandage dipped in Arrack or Brandy : Blisters are frequently employed, and in very slight cases, I believe may be very useful.



#### WIND GALLS.

THEY are situated in small cells, (*bursa mucosa*) which are supplied to those muscles and tendons, which

which are subject to great action, and are very numerous about the fetlock joint. Their property is to secrete, or supply a quantity of mucus, to lubricate the parts, that they may not suffer from their violent friction during action.

If the animal has been exposed to violent or long continued exercise, they inflame and distend to such a degree, as renders them visible; and sometimes will occasion a slight lameness or stiff action.

This complaint can seldom be entirely removed, but is palliated by embrocations of Brandy, Vinegar, or any other astringents.

## RHEUMATISM.

IS very common in this country, especially during the wet seasons at those places where the variation in the temperature is great; as in the Ceded Districts. It frequently attacks in the course of the night, and it is by no means unfrequent that a horse is in perfect health in the Evening, and is taken from his pickets in the morning with scarce a limb to stand on. Sometimes, it attacks one limb, and sometimes the whole are affected. The cure is similar to the attack; for sometimes one leg will suddenly recover, or it will shift from one leg to the other.

Altho' it is more frequent in this Country, I do not think it is so difficult to remove as in Europe—I have generally met with the greatest success from bleeding, hot formentations, and warm cloathing: If this should not succeed and the Animal is in  
high



high condition, the bleeding may be repeated. A rowel or seton may be opened contiguous to the affected part, and the part itself may be blistered.— These last remedies are scarce ever required in this country, as it usually disappears under the first mode recommended.

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#### SPAVINS AND SPLENTS.

THERE is a small bone attached by ligament, to each side of the upper part of the common bones forming the lower parts of the hock and knee joints. These small bones are termed the metatarsal bones in the hocks, and metacarpal in the knees. One of their chief properties, is to receive part of the weight of the animal when in action, and their respective ligaments elongating each time, the weight of the animal descends, it acts as a natural spring to prevent concussion; for there is no known animal, that moves with so much velocity, and so little concussion as the horse; which last proceeds in a great measure from the number of these natural springs, which he possesses in the knees, hocks, fetlocks, and feet.

If the horse is worked too young, or too much; if in shoeing, the foot is pared away more on the inside than the outside quarter, the weight of the Animal descends more on the inside of the leg, than nature designed, and an inflammation of the ligaments is the effect, by which, bony matter is secreted, and the ligament loses its pliability and becomes hard and bony. Excrescences of the  
same

same will also encrease the bulk, and injure the action of the joint.

If it is discovered in its earliest stage, it may generally be reduced by that treatment which will encrease the action of the absorbent system. With this intent, four quarts of blood may be taken to relieve the pain and Inflammation, and one of the following bolusses may be given every morning.

Take of Venice Turpentine

Yellow Resin of each four Ounces

Squills powdered

Oil of Mint or Aniseed of each half an Ounce—Mix and divide into twelve Bolusses.

A Blister of the following should be rubbed over the part affected.

Take of Spanish flies powder, half an Ounce.

Corosive Sublimate, half a dram.

Spirits of Turpentine, four Ounces,—

mix for use—The Corrosive Sublimate, should be previously dissolved in a Table spoonful of spirits of Wine, strong Brandy or Arrack.

This blister should be rubbed in for an hour, after which, it may be tied up with a bandage, and after six or seven days it should be repeated, and when the effects of the second blister is quite removed, frictions, twice a day of strong mercurial ointment for a few days should succeed. The blister may encrease the swelling, but it will abate with the effects of the blister.

If the complaint yet resists, I would recommend firing round the parts affected, which will tighten the skin, and act as a kind of natural bandage



At the Veterinary College, the firing is recommended previous to blistering ; but I should imagine this mode, by hard'ning the skin, would render the blisters and subsequent mercurial frictions, less pervious to the parts, independant of the unsound appearance which firing produces and which we would evade if possible.



BLOOD SPAVIN is occasioned by a dropfical enlargement of the mucus capsule of the joint, which pressing against a superficial vein, passing up the inside of the hock, occasions an obstruction of blood and subsequent enlargement.

Thus the blood spavin does not originate in the vein, but is merely an effect ; consequently to remedy this disease the cause must be removed—This is generally effected by blistering, firing and bandages, and if much inflammation or lameness exists, a few quarts of blood should be taken from the animal.

This treatment in general succeeds, and if the vein does not recover its natural size, it is but of little consequence, as lameness but seldom exists after the mucus capsule is reduced---The vein is sometimes tied up, but no real advantage results from it.



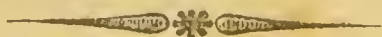
## SECTION VII.

*ON THE EYE AND ITS DISEASES.*

THIS chapter I wrote previous to joining the Cavalry Brigade in which I practised, consequently I could form no competent knowledge, of what variety might exist in diseases of the horse's eye in this country; I therefore wrote according to those which the animal is afflicted with in Europe. On shewing it to a medical gentlemen, he informed me the Animal in India was by no means subject to so fatal a disease as I had described it, the inflammations here, being merely superficial. I have however experienced the reverse. In H. M. 25th Dragoons there are several blind Horses, which I found on enquiry, became so precisely in the same manner as I had described, that is, by repeated inflammations, each attack leaving the eye in a weaker state, till film succeeded and ultimately loss of vision. I also witnessed two or three Horses that became blind precisely in the same manner, and whatever relief, was afforded was merely temporary; and considering the advantages which the Animal enjoys in this country, not being confined to foul stables where the acrid exhalations corrode the Eyes as in Europe, I think the Animal is to the full as subject to inflammations of the Eye in this Country as in Europe, and that these inflammations prove ultimately



ultimately fatal to vision. In H. M. 25th Dragoons I think there are six or seven horses which have lost an eye by this disease. In Europe I don't recollect that it is much more predominant.



### INFLAMMATION OF THE EYE.

THE organs of vision are more subject to be diseased from natural causes, than any other in the animal œconomy, which I imagine may proceed from the Eye Ball being so compound in its structure, its membranes and humours so delicate, both in their texture and functions ; its vessels so minute, that the least irregularity in its circulation, whether from internal or external causes, must unavoidably produce obstructions or pressure on some of its parts, and any one part being defective, destroys or deranges the mechanism of the whole.

A minute description of the eye must tend, rather to confuse than elucidate the subject ; and yet that the Reader should have some general knowledge of its structure and œconomy, I think requisite towards attaining a knowledge of its diseases.

The eye is composed of several coats, containing humours for the purpose of refracting the rays of light, and converging them to a focal point; which point falls on the expansion of the optic nerve, seated on the posterior part of the eye, by which the sense of vision is conveyed immediately to the brain.

This mechanical structure, is founded on the first laws of optics, consequently any person the least versed in that science, may attain an immediate

ate knowledge of the œconomy of the eye.

It is divided into two chambers, the anterior which contains the aqueous or watery humour, and the the posterior containing the crystalline or glassy humour. The rays of light not being sufficiently refracted by the atmosphere, pass thro' the external coats of the eye, which being convex, increase the refraction; they then pass thro' the watery humour, which not only increases the refraction, but perhaps serves to keep a proper space between the refracting mediums. The rays not yet being sufficiently converged, pass thro' the crystalline lens, which being hardest in the centre, draws the rays rapidly to a focal point, which is received on the expansion of the optic nerve, where the object is delineated, and is conveyed from thence to the brain.\*

In the middle of the Eye, there is a thin, round, muscular membrane, called the Iris, and that which appears a black spot in the centre of it, and of an oblong shape in the horse, is an aperture termed the pupil, thro' which the rays pass. This membrane is radiated and gives colour to the eye, as brown, and blue in the human subject, and wall eye, brown and cinnamon colour in the horse; which last is observed to be most free from disease. It likewise dilates and contracts, according to the proportion of light, the eye is exposed to. Thus on examining the pupil of a

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\* As the too great concavity or convexity of the Eye is known to affect the human vision by removing the focal point from the optic nerve; may not the same causes produce that shyness on the road, and other symptoms of imperfect vision in the Horse, when the Eye is perfectly free from disease.



horse, may be prognosticated with some degree of certainty the future fate of vision : On a horse being brought from a dark stable and exposed to a considerable glare of light, the pupil will contract if his eye be sound, to diminish the number of rays which at first stimulate the optic nerve. On the contrary if any of the humours be cloudy, he expands his pupil to receive all the rays possible, as the objects pass on to the optic nerve in a very confused form, having the same effect as looking thro' a Telescope, immediately after the glasses have been breathed on.

The very delicate structure and transparency of these parts, will in some measure account for the obstinacy which frequently attends the cure of the diseases ; why so liable to a return of the complaint ; and why impaired vision must inevitably be the consequence of these returns. The circulation of these parts is conducted by very small capillary tubes, conveying only the finest and most transparent particles of blood ; if the circulation of these parts, be much increased as in a local inflammation, and the blood rushes with a great degree of impetus, the consequence is, a rupture of the capillary tubes, and an admission of red particles of blood to membranes and humours which were before perfectly transparent; and on the inflammation subsiding, and the parts being in some measure restored to their primitive order, the Eye will be left in nearly the following state : The delicate mechanism of the capillary vessels strain'd, ruptured and deprived of their tone, by which the eye will be very liable to be again affected ; and the beautiful transparency of its parts, slightly obscured by  
having

having circulated grösser fluid than nature designed them.

I cannot omit mentioning a muscle of the horse's eye in this place, as it tends to confirm an opinion adopted at the Veterinary College against that of Farriers &c. Most cases of inflammation of the eye, are said by the latter to arise from blows or some external violence, which the animal has received. I will venture to affirm that not one case in twenty arises from that cause; for the Eye in its natural position, is in a great measure defended by its orbit; but on any violence being threatened the animal, or any thing held before his eyes, he exerts the power of this retracting muscle, which is attached round the posterior part of the eye, by which it is drawn a considerable distance within its orbit; and the same power propels a strong cartilaginous substance called the haws, which instantly covers the anterior surface of the eye, by which means the whole ball is secured. \*

I shall now proceed to describe the diseases to which the eye is liable, which tho' much fewer in number than in the human subject, are perhaps more frequent and fatal to vision. In the horse we have but three diseases, Viz, The ophthalmia, or inflammation of the eye, the gutta serena or palsy of the eye, and the worm of the eye.

Inflammation as I before observed, generally arises from natural, very seldom from accidental causes;

\* The comparative variations between the human and horse's Eyes, are as follow.

1st. The horse's Eye has one muscle more than the human subject, Viz. the retractor oculi.

2d. The haws or membrana nictitans of Anatomists, improperly so called in the horse, as it is rather cartilaginous than membranous.



causes ; if however it should proceed from external violence, it will always disappear under the directions I shall lay down for the constitutional inflammation, of which I am about to treat.

It generally appears about the age of five or six, being the time he arrives at maturity——The proximate causes are generally too much or too little exercise, want of fresh air, foul Litters &c. That the latter is frequently so, I am much inclined to believe, from horses in Europe, which are kept in close and foul stables, as in London, being much more liable to this disease than in the Country where the stables are cleaner and less confined. In this case the effluvia arising from the dung and urine mixed up with the litters, corrodes the extreme delicate coats of the eye, which soon attracts the blood in large quantities to the seat of irritation ; whence proceed all its symptoms.

The more external symptoms, are an increased discharge of sharp tears which corrodes in its passage down the cheeks, and may be likewise observed dropping from the nose. The Eye lids, particularly the upper, is more or less swelled, the eye looks cloudy and becomes divested of its transparency ; the pupil is scarcely discernable, sometimes a bright yellow appearance occupies the centre of the Eye, the patient becomes heavy, and hangs

3d, The pupil is oblong in Horses.

4th, From the superior edge of the pupil in the Horse, there are several small glandular bodies pendant, and are covered with a thick pigment, by which they are likewise attached: they are supposed to act in concert with the iris, as a screen to defend the optic nerve when exposed to too intense a light, for when the iris by dilating contracts the pupil, these glandular substances expand, nearly covering those parts the iris cannot extend to.

hangs down his head which he frequently shakes, the haws, if the inflammation be violent, covers part of the eye to protect it from the rays of light, which at this time increase the degree of irritation.

He seldom perspires, and when he does, it is to excess, which is perhaps a proof that the disease is not simply local, but affects the constitution. Sometimes it attacks one Eye only, and on losing blood, and being purged it disappears, and again makes its appearance in four or five weeks, when the other eye becomes affected : thus changing periodically till one or both eyes fall a victim to its malignancy.\*

The intervening periods of this disease, have been supposed to be influenced by the moon: Thus this appearance or stage of the disease has been termed by Farriers, moon blindness. The inflammation is sometimes so great, that a deposit of lymph or white looking matter may be observed at the edge of the pupil, generally the inner angle, as well as on the small glandular bodies observed in the pupil. I would recommend this last symptom to be carefully examined, as it is the never failing criterion of succeeding blindness, or the formation of a cataract; which last, tho' treated generally as a separate disease, is but the termination of this; and whenever the returns intervene at short periods, a cataract is to be expected.†

Independant

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\*These symptoms sometimes appear and disappear in twenty four hours.

†Mr. Coleman thinks the ophthalmia in the horse is not of the same specific nature as that in the human subject, or any other in the known animal world—he conceives it a kind of gouty inflammation peculiar to the horse.



Independant of all the usual remedies prescribed for the cure of this disease, recourse has been resorted to every local application in vain--Messrs. Phips and Wathen's medicine have been tried, we have scarified and divided with a lancet the larger vessels going to the Eyes, the carotids, which supply the head and Eyes with blood, have been tied up, but the blood was soon supplied in an equal quantity, by anastomosing or corresponding branches. Therefore to meet with permanent success, we must not rely on local applications alone, but combine them with constitutional remedies.

The unfavourable account I have given the reader of this disease, I hope, will not discourage him from paying every attention to the animal labouring under it; for by proper treatment the habit is frequently rectified, and the disease perfectly eradicated; besides which the inflammation may possibly proceed from the admission of part of his masols which is frequently mix'd with his Gram, or some other external violence, altho' as I have before observed, it is not so frequent as is generally imagined.

If the horse be in high condition, he may lose four quarts of blood from a large orifice, which will give a temporary relief; and if the inflammation be great, a rowel may be made under his throat, to divert the redundancy of humours. A gentle dose of physic consisting of six or eight drams of Aloes, and one dram of Calomel may be given, and after the operation he may take a Bolus three times a day,

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+ A Cataract is an opacity of the crystalline lens or its covering sometimes the crystalline lens becomes absorbed as is observed in blind grays whose eyes are so much perished as to be scarcely discernable.—

day, consisting of half dram of Opium and one dram of Tartar Emetic made into a proper consistence with a little treacle or honey. This mode may be pursued for five or six weeks, introducing in the course another dose of gentle physic, and concluding with a third.

If the animal be out of condition or of a very delicate habit, three or four diuretic balls may substitute the physic.

The Horse during this course, must be warmly clothed to assist the action of the medicine, and his stable kept very cool, yet not exposed to any current of air. His litters must be frequently changed, his gram reduced to half his usual quantity, and the water he drinks softened with two or three handfuls of bran; his exercise must be attended to, which should be twice a day, unless the violence of the inflammation forbids.

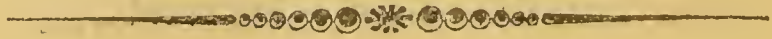
In respect to local applications, I would recommend cloths dipped in cold spring water, frequently applied over his eyes and fore-head, his eyes may be frequently and gently washed with a solution of half a dram of Crude Salt of Ammoniac, or one dram of Sugar of Lead in a bottle of cold spring water, after which a cloth dipped in the solution may be tied over his Eyes to prevent the admission of light. In some very obstinate cases, Salt powdered very fine and gently blown into the eye, has been found to relieve.

It is very probable the inflammation may be dispersed at the commencement of the above course; but I would recommend persevering in it, as the best mode of preventing a return.

If in opposition to every endeavour, a cataract succeeds, which is the last stage of this disease, I would



would recommend laying aside all further remedies, unless an inflammation still exists, which will generally disappear on bleeding, purging, and local applications. \*



### OF THE GUTTA SERENA, OR PALSY OF THE OPTIC NERVE.

THIS disease but seldom occurs, and is generally produced by the staggers, severe blows on the head, or any thing which can affect the brain. Its symptoms are, a peculiar transparent appearance of the center of the eye from which it is termed by Farriers, glass eye.

The pupil too, is very much expanded from the nerve's having lost the faculty of receiving the impression of light, the pupil is therefore continually dilated, endeavouring to perform its accustomed functions; thus in a short time the pupil becomes preternaturally larger; but the most easy method of discovering this disease, is the eyes retaining its transparent appearance, and yet a total blindness in that eye prevails.

One of the most perfect cases of this disease I ever

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\* A great deal has been said of extracting the cataract, couching &c. I think there are too many obstacles to encounter, for independent of the operation being much more difficult than in the human subject from the functions of the retractor oculi and the membrane nectitans, it seldom succeeds, and even allowing the operation to be ever so successful, still the focal distance is removed, and glasses to remedy this defect cannot be employed, and even if they could, still the focal point could not be ascertained, and the animal being deceived as to the true distance, will be always starting and stumbling, by which the remedy will be equal to the disease.

ver saw, was a horse of Mr. Coleman's, and as the cure was also perfect, I shall relate the case, and the method pursued for his recovery. The horse reared up and fell backwards; in his fall, the side of his head struck a stone building; the blow was so violent, that he was with great difficulty recovered from the state of insensibility in which he lay, however on his recovery from this state, a palsy of the nerve was discovered to be the consequence. He had been copiously bled, a purge was administered, spirits of Turpentine was rubbed over his head, spine, and extremities; for the purpose of stimulating; Salt was dissolved in Sulphuric Acid or Oil of Vitriol, the vapour of which was received up his nostrils, and by persevering a few days in this treatment, the animal was perfectly recovered.

From the great success attending this mode of treatment in the above case, and from the rational principle on which it is founded, I would recommend it, in every case of gutta serena, from whatever cause it may proceed.



#### OF THE WORM IN THE EYE.

THIS wonderful phenomena, or production in the animal œconomy of the horse, I will not presume to explain, for I have witnessed but one case, which was on my first arrival, and being under some fear from the very ferocious description I had received of the animal, I would not venture to operate, unless he was previously thrown; in consequence of which I was not successful, although I made two very extensive incisions immediately over the  
worm



worm as he moved on the surface ; but from the position of the horse's head on the ground, I ought to have foreseen the impossibility of the worm's escaping with the watery humour, which is the object of incision ; for when the head is confined to the ground, the water naturally gravitates to the posterior chamber of the eye ; consequently neither water or worm can escape by incising in that posture. It will be needless to add, that the successful mode of operation, is to insert the lancet while the horse is standing ; if possible, the incision should be made while the worm is floating on the surface of the eye, and a little beneath it, by which it will immediately pass out with the water—some care is required not to make the incision too extensive, as the crystalline lens may also escape, which would cause immediate blindness.

I have heard, that mercurial applications to the eye will destroy the worm, which being absorbed, the vision will not be impaired. However extraordinary this mode of cure may appear, it is not so much so as the disease ; and I conceive it worthy a trial, as the texture of the eye would not be so much deranged as by incising.

I have been informed by many gentlemen, that weakness in the loins, frequently succeeds the extraction of the worm, which I believe ; but I very much doubt whether the one is in consequence of the other. It is possible that a relaxation of the nervous system, may however remotely, cause the worm in the eye, as it is a disease confined to hot climates ; and as I firmly believe the weakness in the loins, to be some paralytic affection of the spinal marrow or nerves, so I imagine it very probable

probable, that a horse having had a worm in the eye from a relaxed system, will also be very subject to weakness in the loins. This does not argue any particular connection between these complaints, or that one is in consequence of the other; it only advances, that the same habitual or remote cause, may produce both—This is however intirely hypothesis, which I have presumed to venture, and which at all events I conceive much more probable, than that extracting the worm from the eye, occasions a weakness in the Loins.





## SECTION VIII.

## OF THE GLANDS.

GLANDS are situated in almost every part of the body, for the purpose, of what is generally termed, secreting the various fluids from the blood; as urine by the kidneys, bile by the liver, saliva by the salivary glands, semen by the testes &c.

The property of secretion by glands is very much doubted. A secretion implies the fluid secreted to exist in the blood; but this is not the case, for most of the fluids produced by the glands are not to be found in the blood, which I think is a demonstrable argument against the elective property of glands; for the late opinions favoured the theory of appetency in the glands, and lacteals. Many arguments have been adduced to prove the impossibility of appetency, or a desire existing in glands and lacteals to choose their own peculiar fluid; but the non-existence of these fluids in the blood, is, I imagine, sufficient to entirely expunge this theory.

To the discovery of elastic fluids we are again indebted, for a probable solution on this very important part of Physiology. The blood although it does not contain the respective fluids produced\*  
by

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\*I make use of the word "produced" as less erroneous than secreted, which is proved above to be impossible, consequently the term should be done away as to the production of glands,

by the glands, it yet contains the elementary parts; of which every fluid in the body is composed; there consequently remains but one mode of production, which is the separating from the blood these elementary parts, or rather decomposing the blood, and recomposing the divided parts by various combinations into the fluids produced by the glands; for I again observe that every part of the animal frame whether solid or fluid, are all composed of the same principles, combined in various proportions.

This mode of operation in glands, I think may be supported by many of the natural phenomena. The chyle of gramnivorous and carnivorous animals, we should imagine must be very opposite in their properties, as the one feeds on vegetable, and the other on animal matter, which when simply dissolved produce pulps of very opposite properties; but if they are still further decomposed, their produce is very similar, for their principles are the same, differing only in the proportions. It is then by allowing the lacteals the property of decomposing the assimilated matter of food in the intestines, that we can account for the sameness which we find in the chyle of carnivorous and gramnivorous animals. This could not possibly be the case by any other mode of action; and from the discovery of the decompositions, and various recompositions perpetually succeeding in the vegetable world, and in many instances in the animal, the above operations of the lacteals will appear natural; for I conceive it is merely the infancy of the interesting discovery of elastic fluids, which gives an air of improbability to every successive link of discovery, and fresh observations of their extensive operations in the field of nature.

Several



Several more of the natural phenomena might be adduced in favour of this mode of operation in glands and lacteals, although analogy is by no means the strongest proofs that can be advanced in the present instance; yet if it is known that this operation takes place in other parts of the animal œconomy, or that there can be no other mode of acting, it will in some measure efface the appearance of theory or improbability—a kind of odium which every new observation or discovery has to combat, previous to its adoption. A similar process is known to exist in the lungs, where the air is decomposed and the oxygen separated from it; at the same instant a quantity of hydrogen from the blood combines with part of the oxygen, and water is produced, which escapes in exhaling. Here is the whole process successively performing every time we respire, and as a continued series of well directed observations, prove a sameness and simplicity in the operations of the animal œconomy, the above property of glands is the more plausible.

The rapid mode, by which diuretics are known to act in some measure, supports the above opinion.

If this property is not allowed to the glands and lacteals, by what mode shall we account for an animal out of condition being turn'd out to graze, and returning in twelve or fifteen days with an accumulation of a half hundred weight of fat? This cannot surely be produced by the quantity of poor sour herbs which the animal could have pick'd up during that time, for the quantity of Animal oil accumulated, could scarce be produced from any known quantity of grass; but if the decomposition of the watery parts of the herb is allowed, or of  
the

the water which the animal drinks, the phenomena is developed. For the water as well as the herbs can supply when decomposed, an abundance of the principles requisite for the formation of fat.

An objection may be advanced to this, or rather a Query—If the Brute creation can accumulate fat from water, or the most common and least nutritious herbs, why cannot the human subject receive the same benefit from water and vegetables? To reply, I have to remark, that such instances are by no means uncommon—Many of the natives of India live on rice and water, The lower Class of Irish on potatoes and skim'd milk, many young children use scarce any thing else, and there is hardly a doubt but a person elevated from infancy on vegetables and water, may be fat and healthy ; yet I imagine the human subject requires a different kind of food, and it is known, that people using animal diet, are much stronger than the former description of people ; and when once a person has been accustomed to animal food, he can seldom exist long without it, for the stomach and bowels once accustomed to a strong stimulus, will suffer from so great a reduction as to vegetables and water, and it is this deprivation of stimulus, and want of solidity in the Vegetable food, which would injure the system, more than the immediate want of nourishment, altho' the latter might exist to a considerable degree, as indigestion would take place, and the lacteals losing their accustomed stimulus, would refuse to perform their functions ; for it is an invariable rule in the laws of irritability, that the fibre once stimulated, will require a yet stronger to produce the same effect—

Previous



Previous to my leaving England, a circumstance occurred, which I think cannot well be accounted for by any other operation, than by this property in the lacteals and glands.

A French Prisoner of the name of Donery, taken in the Hoche by Sir. J. B. Warren, was one of nine brothers remarkable for their voracious appetite—The above prisoner, was allowed the rations of ten men daily, which could not quiet his voracious craving for food. That the fact might be well attested, Admiral Child and his son, Doctors Johnson and Cochrane, and many other respectable persons, were present at a day appointed, to witness the quantity of food he would eat, and the effects produced.—The following is the quantity consumed in twelve hours, and he was yet requesting more, which was refused.

Cows raw udder,	lb. 4	} and five bottles of Porter
Solid Beef, raw,	10	
Tallow Candles,	2	
Total of Solids.	16	

When he was with the French Army, and much distressed for food, he used to eat daily, five or six pounds of grass ; but vegetables and even bread in general did not agree with him.

The diet which he preferred, and which appears most grateful also to his constitution, was entirely animal, and that raw. When in those situations in which he could not be supplied with wholesome provisions, he would eat live cats, dogs and rats; of the former he was known to have eaten one hundred and seventy four in one year. In the English prison

prison such a shameful practice was not long suffered.

It is surprizing with this enormous appetite, and savage mode of gratifying it, that his manners were amiable and he was universally liked among his fellow prisoners, and in general, very lively and active.

His skin was of the usual temperature, his pulse generally about eighty, his eyes were clear and bright, his tongue clean, and his stools natural. He had enjoyed one uninterrupted series of perfect health from a child, and his uncommon feeding never interrupted him during the day, and so far from rendering him dull, that after he had eaten the quantity of provision witnessed by Admiral Child and company, he retired with his companions to spend the evening in dancing. He generally retired to bed at eight o'clock and immediately perspired intensely. About one, he usually awoke very hungry, and would eat the residue of his day's provender, when he would again sleep, and violently perspire till he rose early in the morning, when the perspiration left him; and if he could procure a few pounds of raw flesh to satisfy his immediate craving, he was perfectly easy. As a proof of his strength and activity, he had frequently carried a load of three hundred weight to a considerable distance, and when in the army he has marched fourteen leagues with all his military appointments.

This is a very uncommon case, and no satisfactory explanation can result from the consideration of the lacteals taking up such an immense quantity of assimilated fluid, and indeed I must confess it is equally as inexplicable to imagine how the stomach could dissolve such a quantity of flesh, and  
which



which is evidently conveyed into the system in a few hours. We can however draw one conclusion which Dr. Johnson also remarks in his letter to Dr. Blane, shewing the very great importance of the discharge by the skin. I think too, it is very obvious that one of the principal actions of food, is to increase the stimulus of the whole body; for in the above case, it does not appear that the man was more lusty than usual, altho' his digestive powers were so good; but his strength &c. was conspicuous, and the nocturnal sweat proceeded evidently from an increased action of the system; and if we trace its progress, we shall find it stimulating the stomach and intestines, next the lacteals and mesenteric glands, from whence encreasing the mass of blood, it there also acts as a stimulus, until the circulation is reduced by the immense perspirations--the whole of this process appears to have taken place twice every night, without the least apparent injury to the system.

This very general action of the stimulus of food may throw some light on the various mode of feeding horses, and the different effects produced. The chyle or nutritious particles separated from his food, is the same as to its properties, whether he is fed on marsh lands, or old hay and corn, yet the effects produced are very different; for the grass, as in this country, and the boil'd gram, does not contain that quantity of stimulus, which a dry nourishing food does; but it produces a large quantity of poor chyle, and hence a larger deposit of fat takes place, and the animal looks plump; but when he is exercised, his true state is detected, by his profuse sweats, and heaving of the flanks; and as to his being so fat, I conceive by no means favorable, as it is in consequence

consequence of a want of energy in the system, by which the absorbents are too languid to carry off what the arteries deposit. In a horse, fed on good hay and dry nutritious grain, the very opposite effects will be produced. The stimulus being conveyed thro' the system, the action of the absorbents will be strong, and readily absorb the deposited fat; consequently the animal tho' he looks not so plump, yet has no obstructions, or the action of his muscles incumbered with fat. In this state, the animal is much more vigorous, perspires but moderately, and his breathing is but little affected. These are certainly great advantages, but how far they may exist in this country, I am not enabled to decide: I however, think it a trial well worth making, by those who are partial to the animal. It is not impossible, but dry food, might do away some of the most dangerous of the diseases peculiar to the climate. The stone which frequently accumulates in the horse's intestines from eating foul grass, and which eventually produces inflammation of the intestines and death, would be effaced from the list of diseases; as might many more, nearly all of them proceeding from the action and deposit of the arterial system, being stronger and greater than the action of the absorbents; and if the latter is increased by a diet which contains more stimulus, as the dry food recommended, the list of those rapid and fatal diseases which attack the animal in this country, would in some measure be lessened.

I am fearful in this section, as in some others, I may be thought too speculative, and not sufficiently attached to received opinions. In the present state of physick, many supposed facts are now doubted, and the whole is evidently fluctuating, and will no  
doubt



doubt 'ere it subsides, entirely efface the erroneous principles of the ancients, to which medical men have been too much attached. Some satisfactory principles will also no doubt be decided on, which will bear the test of reason, and produce a more general good to mankind at large. Such effects as these must be derived from a spirit of enquiry, which seems at present to interest the medical world, and which is certainly more commendable, than tamely submitting one's practice to be guided by the directions of men, who can give no plausible reasons for such directions ; and it is well known that some diseases are almost invariably fatal, as Dr. Beddoes remarks of the consumption in England. Then surely there can be no excuse for professional men, not quitting the beaten track, when they know it to be so disastrous. Still further in extenuation, I beg to make some remarks on the progress of natural philosophy. This encourages our most seeming difficult enquiries, and will in some measure prove, that tho' we may be at present unsuccessful in the researches of many natural phenomena ; yet the effort is plausible, and paves the way to future success, and which we have a right to expect from time and indefatigable perseverance.

The human mind in the first periods of existence, was totally deficient of every acquired knowledge ; possessing only the faculty of attaining it, of making enquiries and drawing inferences that were more or less satisfactory. This reasoning faculty is the strong and indelible line of distinction, which separates him from the rest of the animal creation. It is probable, that even speech was an attainment of his own, and consequently his first efforts were directed towards attaining this mode of conveying  
his

his sentiments, and making enquiries and responses.

We afterwards find man, admiring the never ceasing and benevolent round of the productions of nature, which is manifest in the first kinds of poetry. History soon followed, as in the ancient books of Moses, Homer &c. and it was not 'till after this period, that the mind still seeking for fresh objects, enquired into its own existence, and the existence of every thing around : Hence the enquiries and writings of the first Philosophers on metaphysics, and moral and natural philosophy.

As we advance; we shall yet find mankind fatiated with their existing knowledge, and still seeking a more extensive field of enquiry. The healing art now made some slight advances, and chymistry that was simply confined to a few ores, and medical compounds, now took a larger range, and embraced a wider sphere of the useful arts. Thus in a progressive series, we find the human mind expanding and developing more and more those wonderful capacities, which have so long eluded the pursuits of metaphysical enquiries.—By comparing the ancient with the modern knowledge, will be brought to one view, the extensive progress which has been made in natural philosophy

Had Æsculapius or Hippocrates, been informed of the nature of vegetation ; of their decomposing water, and circulating the aery-form fluids, which recomposing in an endless variety of combinations produce the fruits, oils, essences, resins, and the whole catalogue of vegetable extracts ; had they I say been instructed in these beautiful discoveries, they would have rejected the belief of the knowledge being human, and deified their instructor.



A Philosopher in ancient times, collecting his mind to a focal point, and directing it to the subject of the operations of nature, could form but wild conjectures ; which with great industry and abilities he would attempt to reduce into something like a system, and which has produced so many ingenious but unsupported theories : But the present knowledge admits of much more accurate observations. The unbounded mind of a Newton could soar and almost embrace immensity——elevated to creation's highest verge, he calmly contemplated the various mazes of the revolving spheres, viewed endless suns supporting and beaming on their respective worlds, and admired the inexhaustible benevolence of a deity, who created such numerous and magnificent vehicles for the reception of life—Soon did his penetrating mind explain the apparent mazes of the spheres, and discover their separate action : To him the whole creation developed her laws and various attractions, and from seeming confusion in the heavens, he deduced beauty and regularity. Unconfined to the extensive grandeur of the spheres, his ductile mind again descends, and with the same philosophic eye, explores the minutest objects—even a ray of light emanating from the sun, could not elude his researches. He divides and analyses it into its various colours, from which ascending with progressive toil, he explains the causes of the rainbows variegated arch, and concludes with describing the various powers, which different substances possess, of decomposing the light into its primitive colours ; while absorbing some and passing others, occasions all their variegated shades.

Other branches of natural philosophy, have been discovered

discovered, of which the ancients could form no possible conception ; as electricity and the use of the magnet : the exillence of the former not being known to them, and they were equally ignorant as to the uses and many properties of the latter. These considerations will, I hope, extenuate me, in those parts of this work, in which I may have departed, from some of those common received opinions, which are void of conviction.



#### OF THE LIVER AND ITS DISEASES.

THE Liver is the largest gland in the body. Its situation is on the right side under the stomach; and its function is to produce bile for the purpose of assisting digestion, and increasing the worm-like motion of the intestines, by which their contents are conveyed from the body.

There is a peculiarity in the supply of blood to this gland, which is not found in any other instance. I have before mentioned, that the fluids produced in the body, were performed by arteries ; that is, from blood flowing from the heart, and generally through the medium of glands, as saliva from the salivary glands, tears from the lachrymal glands, semen from the testes &c. while the liver only cannot separate bile but from venous blood. The vein which supplies it, is formed by the union of the veins from almost all the contents of the abdomen ; as from the stomach, bowels, and spleen.

There are many reasons given for this peculiarity in the liver. First, the arteries would convey the blood



blood too rapidly, for such an extensive supply of bile as the liver produces when in a healthy state, which is proved by its being so liable to diseases in hot climates, where the blood circulates quicker from the general stimulus of heat; by this means the vein supplies the blood too rapidly, and is perhaps also mixed with a quantity of arterial blood, from which bile cannot be produced, and the consequence is, a defect of bile, both in quantity and quality.

The vein which supplies the liver with blood for the production of bile, has two modes of terminating. One is in innumerable small ducts, of which the liver is almost wholly composed, and in which the blood is converted to bile: the other is in corresponding veins, which carries off the residue after the bile is produced.

The small ducts unite as they leave the liver, into a large one called the hepatic, or bile duct. This duct empties itself into the duodenum, which is the first intestine, and where the food is chiefly digested. It is an obstruction in this duct, which is generally the cause of the jaundice or yellows.

I cannot omit in this place, remarking a most glaring error of Taplin's, which cannot possibly be passed over, although at the commencement, I wished to avoid the most distant personal reflections; yet to overlook the present instance would be false delicacy, as his works have been so generally distributed and received, and consequently many of his errors adopted.

In his chapter on the jaundice or yellows, he says "the most simple and least dangerous complaint passing under this denomination, arises solely from an obstruction in the biliary ducts, or in the gall bladder situated between the two lobes of the liver,

whose

whose immediate purpose it is to assist in secreting the bile from the blood, and promote its conveyance to the intestines ; where (by its acrid and stimulating property,) it is destined to excite the peristaltic motion, by which they expel their contents."

I must first express my astonishment, that Mr. Taplin was never informed, that the horse has no gall bladder ; for I cannot for a moment suppose such a mistake could occur, (which it does even in the eleventh edition of his work) to a person in the habit of writing from ocular proofs or observation. He must therefore have wrote (which all his writings prove) from his knowledge of anatomy &c. in the human subject ; which argues a great deficiency in the general knowledge of physic, to imagine, that all the animal creation must be formed with anatomical similitude.

Mr. Taplin points out the exact situation of this non-existing bladder. He then says "whose immediate purpose it is to assist in secreting the bile from the blood and promote its conveyance to the intestines." I must here again state the misapplication of the functions which he attributes to the gall bladder, even allowing its existence ; for it could neither assist in secreting the bile from the blood, or convey it to the intestines. In animals who have a gall bladder, its function is to receive part of the bile from the liver, where the more watery particles being absorbed, renders the residue much more acrid, for the purpose of being a stronger stimulus to the intestines.

To expose more of the mass of error and imposition of this writer on the public, he informs us,  
that



that the gall bladder lies between the two lobes of the liver. This description certainly argues the animal having but two lobes. Thus Mr. Taplin has rendered more complicate the organs of bile, by giving the animal a gall bladder which nature never gave; and the liver he has divided into two lobes, instead of four. He ought to have known from the most common knowledge of comparative anatomy, that the action and shape of the animal, required its being divided into a number of lobes, as it is in most quadrupeds; and to render them yet more supple, each lobe has a number of fissures. It is thus confirmed that Mr. Taplin, could never have examined the internal parts of a Horse, or that he took not the least advantage of it, to make the most common observations. It is most probable, that the human subject was entirely his source of knowledge, as he could not otherwise have so contrasted the natural economy of the animal.

Mr. Taplin has not only created a gall bladder, to which he gives locality, qualities, and diseases, similar to that in the human subject; but he has also prescribed from the same analogy. His prescriptions are loaded with articles which are found to have little or no effect on the horse, and positively none in the quantities he recommends; as figs, tamarinds, split raisins, slick liquorice, saffron, elacampane, cream of tartar, and many other such ingredients, which he must have inserted, either to decorate his recipes, or from an unpardonable want of knowledge in the operation of medicines on the horse; most of them being articles on which the animal might almost feed without any perceptible effects, and which he recommends in doses of a

a few drams. This want of consideration can be only compared to the superstitious and prejudiced Regimental Saliftry, who in cold wet weather, gives to each of the horses, half a date, as a stimulus to prevent the effects of cold. Mr. Taplin is also defective in what he recommends as the more active medicine. In his purgatives, he orders Salts in doses of an ounce or two, while I have given two or three pounds frequently without even rendering the body lax. Jallap, which he recommends in doses of one or two drams, Mr. Coleman has, I believe, administered in doses of half a pound or more without scarcely meeting with any effect. Erring next in the other extreme, Mr. Taplin recommends Aloës and Calomel in such doses, as in England very frequently produces the most lasting ill effects, and frequently inflames the bowels so much as to produce death; while Mr. Coleman finds one third or half the dose answer every purpose of a purgative.\* The danger resulting from violent physick, Mr. Taplin must have known, had he been more accurate in examining the structure of the Intestines than that of the gall bladder—Errors that even those men whom he so ungenerously exposes, never committed. This very loose manner of writing on a science in such general practice, is the more to be depreciated in a man, who so severely abuses others for a deficiency of knowledge, which the want of opportunities and encouragement particularly excuse. His unjust invectives are rendered still further conspicuous by

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\* It is to be remarked that Mr. Taplin wrote for the horses in England, where half the quantity of purgatives which are used in hot climates will suffice, (vide Chap. on the Intestines.)



a circumstance, I was led to enquire into, from his continued censures of Gibson and others. On referring to a publication of Gibson on the anatomy and diseases of the horse (on which Mr. Taplin has bestowed so many ill-natured epithets) I found that he describes the liver &c. very correct, and remarks that the horse has no gall bladder. This must have appeared such an error to Mr. Taplin had he read the work, that he would either have exposed it, or have been led to make those enquiries, which would no doubt have set him right; it therefore clearly appears that he never read Gibson's publication, consequently his outrageous criticisms must be unjustly founded, and worthy of no notice from the public.

I hope to be excused this deviation, as it is the only one I shall ever intrude, and which I should not have so far extended in the present instance, but for the very illiberal manner in which Mr. Taplin has erected his name, by calumniating every previous writer; many of whom had merit and observation, though not that fastidious and florid display of language, which Mr. Taplin exhibits on a science the least adapted for it.

The reason assigned for the absence of the gall bladder in horses, is the continual feeding of the animal, and the smallness of the stomach preventing the food from remaining there sufficient time to be digested, as in other animals. This function therefore in part takes place in the intestines. From this structure it will be obvious, that gall bile would be prejudicial, hurrying the motion of the bowels so much

much, as to prevent the full extraction of the nutritious parts.\*

The simple structure of these parts in the Horse, accounts for his being less subject to complaints of the liver, than animals whose biliary system is more complicate, as in the human subject, sheep, oxen, &c,

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### OF THE JAUNDICE OR YELLOWS.

THE existence of this disease, is known by the animal being very costive, the fæces very pale and small in quantity, and his urine deep coloured; the inside of the eyelids, and what is termed the white of the eye are tinged with yellow, his appetite diminishes, he becomes dull, and hangs his head. If the obstruction of bile is great, and the liver is any ways inflamed, he will perhaps point his head to his right side, expressing uneasiness more than direct pain. If the disease is not detected, the animal will very soon become very poor and out of condition.

The existence of inflammation in the liver of the horse has been disputed; I will only assert, that I have frequently seen instances of the jaundice, and two or three times attended with considerable pain in the right side. One case in particular, was in the

13th

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\* The gall bladder is the receptacle for a part of the bile from the liver, where the more watery parts being absorbed, renders the residue very acrid and stimulating, generally termed gall. In animals that have a gall bladder, as in the human subject, sheep, oxen, &c. there are two kinds of bile, which pours into the stomach; that which comes immediately from the liver is very mild and flows almost continually in health; while that which is in the gall bladder, flows only when the stomach is full: the horse has but the former.



13th Dragoons, where the animal was so much reduced with all the above symptoms in their most aggravated form, that it was not supposed possible he could survive. He was blistered on the regions of the liver, and a very strong dose of Calomel was given, which entirely succeeded.

I do not advance this as a positive inflammation of the liver, but it certainly in my opinion must have been inflamed sufficiently to produce pain; which is the more probable when the quantity of bile is considered, which being obstructed in its natural passage to the stomach, is obliged to be absorbed from the liver, and carried into the blood. By this course it also gives a yellow tinge to the secretions.

This disease is produced generally from inaction after an active campaign, or any other continued customary exercise: it also frequently attends a change of diet or temperature.

The cure generally succeeds by the following course of physick, repeated two or three times, with intervals of six or eight days between each dose.

Take of Calomel two drams.

and to it add Soap sufficient to make it into a bolus.

Twenty four hours after it has been administered, if it does not purge, an ounce of Aloes may be given, softened into a ball with Soap and a few drops of oil of Anniseed or Mint. His cloathing should be increased, and he may be gently exercised morning and evening. If it is observed to be accompanied with pain in the right side, or lameness, a blister over the regions of the liver will be necessary.



## ULCER'D LIVER.

THIS is a disease which does sometimes occur in England. In this country I have however reason to believe it very common, from many cases which I have already had an opportunity of witnessing.

Unfortunately it can seldom be detected, 'till too late to receive any benefit from medicine. I have known a horse to be taken ill and die in two or three days ; The liver was found indurated in some parts, and very putrid ulcers in others, the organization of the whole being entirely destroyed : It must therefore have been diseased, a long time previous to his appearing ill. I imagine it must have proceeded from scirrhus, particularly as some parts of the liver was evidently in that state.

The first instance of this kind I ever saw, was in a horse belonging to an Officer of the 25th Dragoons. He had become very dull and off his appetite, his coat was however smooth and loose. On examining his eyes they were tinged with yellow, his bowels lax, and his fæces very pale. The symptoms indicated a disease in the liver, but neither inflammation or simple obstruction, as the former would be attended with pain or lameness, and the latter with pale hard fæces and dark yellow urine. A gentle dose of physic was first given, with a full proportion of Calomel which operated and removed the yellow tinge; it did not however succeed in restoring his appetite, spirits, or condition. Calomel was then given every night, in doses of fifteen grains for six or eight days, after which the physic was repeated to carry  
off



off the mercury. The horse however still continued the same. Cordial medicines we next had recourse to, as there were evident symptoms of debility, tho' we were entirely unacquainted with the immediate seat of the disease; this was however not more successful. The horse was then sent to Arcot, conceiving it possible that he might receive benefit from care and rest, as he had been through two very active campaigns. After a few weeks, without any other visible symptoms but gradual decay, he died. By what I could learn from an Officer, who was present when the Animal was opened, the liver was an entire mass of ulcers and putrefaction.

This disease may very possibly commence or succeed slight obstructions; for the vessels which produce the bile in the liver, may become deranged, by which the quantity and quality of the bile is altered, which I think evident from the animal being generally lax, though not proceeding from healthy bile. Whatever the cause may be, I will not presume to decide, as, from the little attention which has yet been paid to this disease, it can be only surmise. We are however authorized to conclude, that it is a chronic disease in the first instance; for such a state of the liver could never take place in a few days: there must therefore be a state of pre-indisposition, which if detected, I think the cure would by no means be difficult; as Mercury is as much a specific in liver cases in the horse, as it is in the human subject.

The knowledge of this disease is at present so deficient, that we can urge but little in the form of relief. In respect to the knowledge of it, which the natives possess, is very trifling, and productive of no advantage: they are entirely unacquainted with  
any

any symptoms attending it, they only know it does sometimes exist, from observations which they have made on opening the animal after death, where they have sometimes found worms in the ulcers of the liver. From every enquiry I have made on the subject, of and concerning them, they only know it does sometimes exist, without possessing any one single proof or symptom by which it can be detected in the living state. If a horse has a tedious illness and decay, for which they cannot account, they frequently assume a kind of logical knowledge of its existence; if it is no other disease, it must from necessity be the one in question; and from the frequency of this destructive disease they may be sometimes right; but even their conclusions of its existence, though most generally fallacious, are never made 'till every hope of relief is past.

I can offer nothing in mitigation of this disease. Perhaps if the animal was more particularly observed, and his state investigated when he appears lower than ordinary, or falls off either in condition or his feeding; I think obstruction or affections of the liver would be very frequently detected: in which case, medicine as recommended in the last chapter on the jaundice, might probably succeed; or small doses of Calomel of twenty grains might be rolled up with a little new bread, in the form of a bolus, and given every night; and an ounce of a strong Mercurial Ointment might be well rubbed over the region of the liver every day, for ten or twelve days; after which, one or two doses of physic might complete the cure.

It is only by seeking it in its incipient state that we can hope for success, as when it is more advanced, a cure is impossible. The animal under the  
above



above course may be much reduced, which would have been equally the case, only more tedious had medicine not been employed; and though the animal be reduced by the medicine, his return to condition would be the more probable. It is very possible that this disease might by the above means be frequently prevented, and if the study of the prevention of diseases was more extensive, it might perhaps be of more real service to mankind, than a cure, or what is most frequent, a tedious alleviation, which is so often observed in the human subject.\*

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SWELLED OR INFLAMED TESTES,

MAY be either fomented with warm emollient applications; or frequently bathed with cold astringent ones, of sugar or extract of lead and water. These are certainly very opposite applications, but in many cases they produce the same effects, which peculiarity is noticed in the section of the operation of medicine. I would strongly recommend in all diseases of these glands, that they should be kept bandaged up or suspended, to prevent any increase of inflammation from their weight; and for the same purpose, all kinds of exercise should be particularly avoided.

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\* For inflammation of the kidneys, vide the following section.



## SECTION VIII.

*OF THE URINARY CANAL.*

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I HAVE omitted repeating any thing on the structure and functions of the kidneys, as I had occasion to describe them, in treating on the operation of diuretics : to which Chapter I refer the reader for their structure &c.

The urine, is conveyed from the kidneys to the bladder, by two long tubes called ureters. The bladder is possess'd of a muscular coat, for the purpose of contracting on, and expelling its contents when distended ; for contraction in muscular fibres is the consequence of distention. Stimulus, will also cause muscular fibres to contract : thus a small quantity of very acrid urine will cause expulsion from the bladder : and hence the frequent desire of voiding urine, when the secretions from the blood are very hot, as in fever, inflammation of the lungs &c. If the muscular coat of the bladder be inflamed, the same effect is also produced.

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## INFLAMMATION OF THE KIDNIES.

THIS disease frequently proceeds from an imprudent use of diuretics. In this country, I have sometimes known the kidneys to be slightly inflamed, by some noxious, or acrid herbs mixed with  
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the grafts ; which appears to act in a similar manner to cantharides, stimulating the whole urinary canal from the kidneys to the end of the urethra. If the quantity received be small, it irritates the kidneys, and the secretion of urine is increased ; but if sufficient to inflame them has been taken, the quantity of urine discharged will be small in quantity and high coloured, attended with considerable pain and anxiety, which frequently subsides when the operation of the herb is finished. In these cases, taking three or four quarts of blood from the system, and soft congee drink will generally succeed.

The general symptoms of inflammation of the kidneys are as follows. The animal expresses great uneasiness, generally standing with his hind legs extended ; the pulse will be tight and quick, the urine will be small in quantity, high coloured and frequently tinged with blood ; The animal will also shrink on being press'd on the loins. Some caution is still required to ascertain the disease, which may be confirmed by the following disagreeable operation. A Farrier, acquainted with the situation of the bladder, should insert his hand up the rectum, to examine its state ; if collapsed with the above symptoms existing, you may conclude with confidence that one or both kidneys are inflamed ; if on the contrary the bladder is distended, some other part must be the seat of disease, as no affection of the kidneys can retain the urine in the bladder ; The cause must therefore be either in the neck of the bladder or urethra, and a catheter must be employed, as directed in inflammation of the neck of the bladder.

When the kidneys are inflamed, five or six quarts of blood should be taken from the system, and every

every kind of liquid should be avoided, as the secretion would increase the irritation of the already too irritated glands.

As a cathartic five or six drams of Aloes may be employed; but Calomel and the Turpentine must be carefully avoided. A Clyster of warm water, with an ounce of Aloes dissolved in it, might perhaps answer the purpose of evacuating the intestines, and gently irritating them, to divert the fluids from the seat of disease: with this intention it should be repeated every six hours until the symptoms abate. At the Veterinary College, a continual application of cold water over the region of the kidneys is recommended. Blisters with Spanish flies must be avoided, as they particularly affect the kidneys; the purpose of blisters will be however fully answered by firing over the loins, and, as in other visceral inflammations, ligatures may be employed round the legs—Exercise is particularly prejudicial, until the vigour of the animal is perfectly restored. Stones are sometimes found in the kidneys: I think, I have seen some in Mr. Coleman's museum, weighing six or eight pounds, which accumulated *Strata Super Strata* of various shades. I imagine there can be no remedy for this disease, as it cannot be detected until in its advanced stage. Calculi are seldom found but in the pelvis of the kidneys, as the horizontal position of the animal prevents their gravitating to the bladder, as in the human subject.

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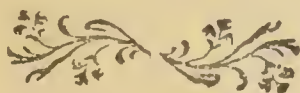
## DISEASES OF THE BLADDER.

THE male, is more subject to inflammation of the neck of the bladder, than the female, in consequence of the urethra being so much longer than that of the female. The orifice of the male's is much smaller, therefore more liable to be obstructed when inflamed. In this disease the animal will express much uneasiness, frequently endeavouring to void his urine, in which he seldom succeeds : a few drops may however sometimes escape. But the most certain mode of detecting the positive existence of this disease, is, by procuring a Farrier, who is acquainted with the situation of the bladder, to insert his hand up the rectum, and examine its state ; if it is full and distended, the neck of the bladder is inflamed, which contracting, prevents the passage of the urine ; if no distention is felt, the bladder will be collapsed, and a palsy of the sphincter of the bladder will be then the cause. Some caution is therefore requisite to distinguish, as they require a different treatment. The former is not a very rare disease in this country, as I have already observed it more than once, and the latter I have never yet met with—it is perhaps most common in breeding mares.

When the neck of the bladder is inflamed, four or five quarts of blood may be taken from a large orifice, and warm water may be employed to foment the abdomen : warm water or congee, to the quantity of two or three gallons, may be injected up the rectum, which will foment the bladder

der from its contiguity. If this treatment affords no relief in half an hour, a catheter should be introduced up the urethra to draw off the urine: this operation should be performed, if possible, under the directions of a medical man, as Farriers are too apt to use force, which on this occasion, would frequently prove highly injurious. All medicine which stimulate, must be particularly avoided, as purges, diuretics, blisters &c. Fluids, in the form of drink must also be avoided, as they would only increase the quantity of urine in the bladder, which has already too much accumulated.

If the bladder itself be inflamed, it may be known from the animal voiding his urine very frequently and in small quantities, but not drop by drop as in the last complaint. The same treatment will be requisite here, as recommended when the neck of the bladder is inflamed, with the addition of frequent injections of warm water into the bladder, which will foment the immediate seat of disease, and prevent the urine, from irritating the already too sensible coats of the bladder. This operation, may be performed with a common clyster pipe and bladder, or a large syringe. If a palsy of the sphincter of the bladder exists (as explained when describing the inflammation of the neck) it is perhaps best treated, by a stimulating and diuretic course of medicine; but I can say nothing from my own observation, as I have never had an opportunity of seeing this complaint.





## SECTION IX.

## ON THE INTESTINAL CANAL AND ITS DISEASES.

## STOMACH AND INTESTINES.

THE stomach of a horse differs very much from that of almost every other animal. It is smaller in proportion to the bulk of the animal, and is partly lined with a strong, thick, insensible membrane, resembling white leather.

The food is first received in a cavity of a funnel like shape at the upper part of the throat, called the pharynx, which contracting on its contents, propels it through a passage (the oesophagus) into the stomach. In the oesophagus the insensible membrane (which extends to half the stomach) commences; this membrane is the principal cause, that the contents of the stomach cannot be regurgitated back, as in vomiting. The oesophagus is always collapsed, except in the act of swallowing, when it becomes extended to admit the passage of the food, forced into it by the contraction of the pharynx; consequently the insensible membrane, not contracting itself when the oesophagus contracts, it  
lies

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The velum palati, and the epiglottis forms a complete valve which prevents any communication between the lungs and mouth.--The animal breathes only through his nostrils.

lies in loose folds, forming a kind of valvular structure at the entrance of the stomach, which prevents the food from repassing.

This structure is also perhaps the reason, such violent medicine may be given without any great inconvenience; as it partly defends the nerves of the stomach, which are very numerous: It is perhaps too, from this insensible membrane, that the stomach is so little liable to disease.

The food from the stomach, passes into a small intestine called the duodenum, where it becomes mixed with the bile and assimilates. From this it passes through the remainder of the small intestines, which are very much convolved, and then enters a large intestine called the colon, which encircles all the other intestines. The curve which it makes to effect this, very much retards its contents; particularly as it decreases very much in diameter as it proceeds, insomuch, that one part of this intestine at some distance from its origin, loses nine tenths in diameter: this will prove the cause of strong doses of physic being so dangerous; for if a quantity of strong stimulus accumulates in this part of the intestine, the contraction will be such as to produce obstruction and inflammation, which often terminates in gangrene and mortification. It is reckoned that upwards of a thousand horses are annually destroyed in England, from too violent doses of physic, as most books on farriery, particularly a late author, recommends Aloes in doses of eight, ten, or twelve drams, with one or two drams of Calomel, Jallap, &c. while Mr. Coleman finds three, four, or five drams, sufficient with a dram of Calomel in a cold climate:

And



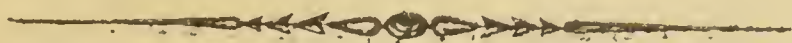
And the consequence of exceeding this dose, I have frequently observed when I was Assistant Surgeon to the 13th Dragoons, before I had studied the present branch of physic; the dose was then usually regulated by Taplin. At the cavalry depot at Maidstone, a horse had been physicked as above, and in three days he died. On being opened, the contracted part of the colon was found to be obstructed, and most of the intestine was mortified. In the 13th Dragoons, horses after being physicked in this violent manner, have been so reduced, that six months at pasture would scarcely recover them.

In different climates, the doses of physic may vary. In this country where there is a continued and very powerful stimulus from the increased temperature of the atmosphere, the solids must be more relaxed and exhausted; consequently a stronger stimulus must be used; which I find to be the case in every instance, where I have had occasion to employ strong stimulus, as in gripes, spasms &c. I have been obliged to administer, twice, or three times the quantity, which would be required to produce the same effect in England. This holds good in almost the whole of organized nature—The human subject, requires double or treble the Calomel in this country, to effect the same as in England; and these principles also extend to the vegetable kingdom.

The physic therefore required for a full grown horse in this climate, may be one ounce of Aloes and one dram of Calomel, with a few drops of Oil of Anniseed or Mint to prevent pain from flatulence; and if it does not operate in eight and forty hours, it may be renewed. This dose will suit  
common

common occasions, but must be varied according to circumstances, which is attended to, in the respective complaints. The animal should always be kept on a spare loose diet, for one or two days previous to his taking physick—mashes perhaps succeed best.

The Bowels, have a continual worm-like movement, called its peristaltic motion, which shifts and changes the situation of the food, by which fresh portions of it are always brought in contact, with the surface of the intestines; where the small absorbent vessels, are distributed for the purpose of extracting the nutritious parts; This motion also assists the passage of the fæces.



#### DISEASES OF THE THROAT, STOMACH, AND INTESTINES.

The mouth and pharynx, or upper orifice of the passage leading to the stomach, are frequently inflamed, and is first discovered by the Horse's masticating his food and dropping it out, the parts being too sore to admit his swallowing. On examining his mouth, the posterior parts towards the root of the tongue, will appear inflamed, and frequently covered with small white spots or ulcers: in other points the animal will be scarce affected.

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There is a peculiarity in the Horse's bowels which exist in few other Quadrupeds. The whole abdominal viscera in most Animals is covered by the omentum or caul, which is first observed when the abdomen is opened. This membrane scarcely exists in the Horse.



The parts may be washed with the following, three or four times a day.

Take of Tincture of Myrrh four parts.

Brown Sugar two parts.

Vinegar six parts. mix &c.

A Feather dipped in this gargle may be introduced into his mouth, or it may be injected from a syringe.

If the animal is in condition, three or four quarts of blood may be taken away, and a dose of physic administered as recommended in the last chapter. His cloaths should be rather increased; and his situation such as not to admit any current of air, as it is frequently the effects of cold.

The insensible coat lining the upper part of the stomach, has generally a number of small worms called bots attached to it.—Mr. Coleman thinks, as they are so universally found in healthy subjects, that they are not prejudicial, but perhaps assist the insensible membrane, to reduce the contents of the stomach to a pulp, in the same manner as the gizzard of fowls: when however they are too numerous, they produce loss of appetite and general atrophy or decay. A particular case of this kind occurred at the Veterinary College.

A Horse had been long time falling off, and every effort to relieve him proved useless. The animal at length died and was opened—in his stomach an immense number of these worms were found; some had made their way through the coats into the cavity of the abdomen, while others had inserted themselves so deep as to be scarce perceptible: there could of course be no doubt as to the cause of his death.

The

The mode by which these worms inhabit the stomach, is accounted for in an ingenious manner. In the summer, the horse fly deposits its eggs on the hairs of the animal's coat, which he bites; by which they mix with his saliva, and pass into his stomach, where the heat brings them forth; and their conversion again into Flies has also been observed. They have two small sharp angular claws towards the posterior part of their body, by which they adhere very tight to the insensible membrane.

They cannot be detached by any form of medicine, even when the subject is dead. I am therefore fearful we can recommend nothing, in cases of their being troublesome. Many severe stimulants have been used without affecting them; and what renders their expulsion or destruction the more difficult, is their being confined to the insensible membrane only; which lining the upper part of the Stomach, cannot be much influenced by any medical application. When however they are voided, a dose of physick will accelerate their expulsion; for I believe there is a season when they drop off, and others accumulate.



#### DISEASES OF THE INTESTINES.

INFLAMMATION is frequently the effects of too violent purgatives: sometimes it proceeds from an acrid accumulation in the Intestines; particularly in the contracted part of the colon: it also arises from other natural causes.

Great caution is required to distinguish this disease



ease from the spasm or gripes, which in its symptoms very much resembles it, though they are complaints of a very opposite nature, and require different modes of treatment.

When the intestines are inflamed, the animal throws himself down and rolls on his back, strikes at his belly with his legs, gets up and lies down repeatedly, seeking various postures for relief. The extremities are cold, and his pulse will beat very hard and quick, sometimes nearly doubling its healthy and natural state. As it is of such consequence to ascertain the positive existence of this disease from spasm, I would strongly recommend the most minute attention to the two following points: first, in the spasm, the animal when he rolls on his back, will endeavour to retain that position; whereas in the inflammation, he barely rolls on his back, continually shifting without the least effort to retain himself there. The next existing difference, is the strong quick pulse, when the intestines are inflamed; while in the spasm it is scarcely affected, unless the spasm continues so long as to produce inflammation; in which case the pulse must rise; but I should imagine that an inflammation arising from spasm, must be attended with inevitable destruction to the animal.

I have frequently observed, that great pains is taken to prevent the animal from lying or rolling about in these diseases, a precaution I think perfect useless, unless when you wish to administer the remedies.

The Inflammation ascertained, six or seven quarts of blood should be immediately taken from a large orifice. All hard food should be avoided, giving him nothing but congee or gruel: ligatures may be made round his legs to detain the blood in the extremities,

tremities, and frictions with stimulants should also be employed: rowells may be opened under his chest, abdomen, and on the inside of his thighs; and the whole surface of the belly may be blistered: Three or four gallons of warm water should be injected, which will foment the parts and evacuate the perhaps acrid fæces. All other evacnants should be particularly avoided, and his cloathing should be increased.

All these remedies may be employed, as soon as the disease is discovered, as it generally proves very rapidly fatal; and if the pain and inflammation does not abate in eight or ten hours, five or six quarts of blood may be again taken away, repeating all the above remedies. If a warm bath could possibly be procured, it would perhaps afford a very ample mode of relief. This should be kept at every receptable for sick horses, as its uses may be much extended: It might also be occasionally a cold bath; and its construction such, as to be neither expensive, or troublesome to use.

If an inflammation proceeds from the use of too violent purgatives, (which may be known by most of the above symptoms immediately succeeding the medicine) starch clysters would be preferable to warm water; and if he is violently purged, a dram of Opium may be dissolved in each clyster, and fifteen or twenty grains of Opium may be given him in his congee every three or four hours; as the bowels are so irritable that a common dose of Opium would be attended with danger. It should be therefore administered in small doses with short intervals, by which mode, the superabundant irritability will be worn away or allayed. If the physic has not operated



rated, the Opium should not be used; but the animal may be gently walked about.

If however the inflammation should not abate in thirty or forty hours, the pain will perhaps cease, and he will appear somewhat relieved. This opinion may be fallacious, as the Inflammation will probably, be passing to a state of gangrene and mortification, which is soon observed by the flanks heaving short and quick, and the pulse sinking. These symptoms are the forerunners of death.

There is another kind of inflammation which I have seen in England, and which very frequently occurs in this country.

Cavalry horses encamped in England, in some measure resemble horses at their pickets. In England when in this situation, they have been known to eat large quantities of earth. Mr. Coleman mentions his seeing a Camp horse, discharge upwards of twenty pounds of sand. It will sometimes accumulate in the bowels and form a large stone, which from its bulk will produce inflammation. It will be obvious, that inflammation arising from this cause must be very opposite to the last, as the intestines are there contracted, and warm emollient injections are employed to soften the acrimony. In the present case the cause must also be removed, which will require strong purgatives; a very opposite treatment to that recommended for the former. This disease very frequently occurs in this Country, from the animal's eating his grass unwashed. Whenever this is suspected, or sand or gravel observed in his fæces, a purge should be given.



## SPASM OF THE INTESTINES OR GRIPES.

AFTER what has been said in describing the symptoms of inflammation of the intestines, little will be required in delineating, those of spasm of the intestines.

It generally proceeds from cold rainy weather, poor forage, large draughts of cold water, particularly when warm; its attacks are generally more sudden than in inflammation, and the animals actions are something quicker; but for the principal variations by which this disease may be distinguished, I must refer to the last chapter, of inflammation.

It is fortunate, that spasm occurs much more frequent than inflammation; as the cure is attended with little difficulty.

The Turpentine is found to be so much a specific in this disease, that Mr. Coleman declares he never knew an animal lost, where it had been employed; and it is a complaint which is as frequent in England as in this Country.

The oil or spirits, may be given in about the quantity of a large claret glass full, mixed with an equal quantity of hot water, and poured very warm down his throat by means of a horn: the belly may be also well rubbed with it, after which he may be walked briskly about. If he is not easier in half an hour, the dose may be repeated, which I have seldom found to be required, among several cases I have met with in the 25th Dragoons.

If the spasm be very violent, three quarts of blood may be taken away, and copious clysters of warm  
water



water may be used. Some horses are very liable to these attacks, and their approach is frequently observed by the animal being low, and off his appetite and natural thirst. If one of the following bolusses be given, the threatened disease would be generally baffled, which I have had repeated opportunities of witnessing

Take of Venice turpentine, two ounces.

Opium, one dram.

Flour, sufficient to render it the consistence of a bolus.

or

Take of Yellow Resin, one ounce.

Opium and Camphire, each one dram.

Spirits of Turpentine, sufficient to soften to a mass.

If medicine cannot be procured, a bottle of hollands, or arrack may be made hot, and given by means of a horn: this may be repeated in half an hour if required, and he should be kept warmly clothed.



## SECTION X.

*OF THE MODE OF SHOEING RECOMMENDED AT THE VETERINARY COLLEGE, AND WHICH IS ADOPTED BY THE BRITISH CAVALRY.*

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**N**O branch of the Veterinary art, is more defective in this country; than that of shoeing: indeed it is this defective principle alone, which brings it immediately under our consideration.

The Horse's foot; certainly is not in a natural state when shod; it therefore particularly concerns us to avoid deranging the economy of the foot, by this deviation from nature. To effect this, it requires; the functions of the several parts should be understood. If this knowledge is necessary towards applying a proper shoe; and trimming the foot in such a manner, as not to disturb the natural shape and œconomy; how can it be expected, that men; totally destitute of all knowledge of the formation of the horse's foot, and the uses of the different parts, should be able to cut the hoof, and apply a shoe, without disturbing, or in some degree perverting the intentions of nature? Ignorant of chymistry and the properties of medicine, unacquainted with the structure of the animal, it was impossible for them to adopt any rational system; and without system, it was not likely that the art could ever be much improved: I say, how is it likely, that a man who has never seen the internal structure of the foot, should be able to keep it in  
repair



repair, when artificial shoes are employed; and how much more difficult must it be, to restore the natural functions if diseased, without the most remote idea, for what purpose, those parts were intended?

It is notorious, that the common method of shoeing engenders diseases; as corns, running thrush, canker, and frequently permanent inflammations of the fetlock joints, better known by the appellation of chest founder'd. These ill effects, very naturally led to enquiries, on the physiology of the foot; and the consequence of those enquiries, is the practice here recommended, which is not confined to preserving the foot, but restores its powers when diseased; and I am happy to add, that the advantages resulting from it, are so conspicuous, that the British Cavalry have adopted it, as well as the generality of the people in England.

It has been thought, that the shoes employed in this country, having thin heels, (which is likewise recommended in the Veterinary College shoe) that no alteration was therefore required: indeed it has been suggested, that the College was indebted to this country for the improvement; these errors will be done away, by the following sheets on the subject.

We shall refrain from entering on the anatomy of the foot, as it is very complicate and would only perplex. A description of the external parts, will perhaps be sufficient to prove, that the common practice of shoeing, alters the natural form of the hoof, and produces in it, a variety of defects; while the practice here recommended, preserves its structure and uses unimpaired.

its

The natural hoof, and the art necessary to be adopted for its preservation, being considered, we shall then proceed to the different diseases incident to the hoof and foot, and suggest the remedies necessary to be employed for their removal.

Before we consider the best practical mode, of preserving the feet of horses by shoeing, it will be necessary to describe the external form, the structure, and the economy of the hoof. Without a knowledge of the different parts of the natural hoof, we shall be liable to mistake disease for health, and health for disease.

To ascertain the figure and proportions, of the well-formed hoof, there is no more necessary, than to examine hoofs of horses, where no shoes, or art of any kind has been employed. We shall then find, that the hoofs of the fore feet are as wide from heel to heel, as they are long; that is, the bottom of the hoof approaches to a circle. (See Plate II. Figure the 1.) This fact has been so little attended to, that most writers have given plates, and descriptions of disease and contracted feet, when they intended to describe a natural foot.

The common practice of shoeing, has been so universally destructive, that, unless the hoof be examined, before it comes to the hand of the Farrier, there is no probability, that it should ever be seen in its original perfect figure. From this important circumstance being overlooked, authors have had various opinions, respecting good and ill-formed feet; for all of them appear, to have made their observations on horses hoofs, that had been repeatedly shod, without attempting to establish any rule or principle from nature. That there is rule or principle



ciple, in the original form of the horse's foot, before it has been altered or perverted by art, is evident ; for no doubt, every animal, as well as every part of an animal, has a certain structure and function when in health, from which there can be no deviation without producing defects.

Those that are in the habit of examining, the formation and economy of animals ; as they advance in knowledge, are more and more convinced, that every part is made with infinite wisdom and contrivance ; that each part has its particular use ; and, that had it been made otherwise, the purposes for which it was intended could not have been answered.

We should have no difficulty in demonstrating, that a circular foot, as it comes from the hands of the maker, is the best possible form for the Horse. No one can doubt, but that a foot of this description, is better adapted to support a great weight, than a sharp oblong contracted foot, which sinks deep into the ground at every step, and fatigues the animal. It is also true, that in proportion as the hoof is long at the toe, the horse is liable to trip. These are the obvious inconveniencies of a long contracted hoof ; but as the natural hoof is created circular, any deviation from this figure, produces an equal alteration of the parts contained within. The contents of the hoof, are as tender as the quick or sensible parts of the nail, and can no more endure pressure, without pain and inconvenience, than the human foot, can bear the continuance of small, tight shoes.

The cavity of the hoof, is always completely filled by the foot, so that the natural hoof is perfectly

ly equal to contain it, without the least pressure; but not one hair's breadth larger or smaller. No shoe can possibly be fitted, with such mathematical exactness to the human foot, as the hoof is to that of the horse. But as the cavity of our shoes cannot be diminished without pain, so the hoof of the horse cannot be altered in its form, without a pressure, equally painful on the foot, and which, with equal certainty, tends to promote disease. When the human foot is pinched by too small a shoe, the pain is naturally removed, by the substitution of a larger one; but the constant shoeing of horses in the common way, gradually increases the contraction, and the animal is forced to perform great labour, with a hoof, that is every day producing more and more pressure on the foot.

Whatever be the structure and form of the natural hoof, I presume it will be admitted, that the sole object of shoeing, is to preserve the hoof in the same state. No art can improve the original circular foot nature has made; and that practice must be pernicious, and highly absurd that alters it. To ascertain, whether this principle has been attended to in practice, and the foot preserved in health, we have no more to do, than examine the hoofs of horses, that have been repeatedly shod. It will then be observed, that nearly in proportion to the repetition of shoeing, the foot deviates from a circle, and becomes oblong. Indeed many feet, from this cause are not one third, and some not even one fourth as wide as long. (See Plate II. figure the 2.) Age, however, has no effect in changing the form; for we cannot only preserve horses feet in their natural condition, but when contracted, restore them to their original



original figure. Nevertheless, in proportion, as the common practice of shoeing has been repeated, the heels will be generally more or less contracted. And this contraction, which usually terminates in lameness, is not the only effect of improper shoeing; for thrushes and corns are generally produced by the same cause. It is therefore of great importance, to ascertain the practice that occasions such effects, and the means best adapted to prevent them. But previous to this enquiry, it is necessary to describe the formation, and functions of the coronet, crust, sole, frog, and bars, which compose the hoof.

The coronet, is that circular, rather projecting substance, which surrounds the top of the hoof, and where the fetlock joint ends: it is a circular cartilage, well provided with blood vessels, for the purpose of secreting the horn, of which the crust or wall of the hoof is composed. The crust or wall surrounds the foot. It grows obliquely, from the coronet downwards, and increases in width as it descends. The crust, is the only part that can receive nails without mischief, is thicker at the toe than the quarters, and generally thicker at the outer, than at the inner quarter. In the inside of the hoof, there is a bone termed the coffin bone, which in shape very much resembles the hoof. This bone is connected to the crust, or wall, by fleshy, laminated fibres, which resemble the inside of a mushroom; it is the union of the crust with the coffin-bone, that sustains the weight of the animal: thus, the horse is not supported by the sole or frog; for, if those parts be removed or diseased, so as to become soft, and of a fungus structure, and incapable of resistance, as in canker; the

the crust, is nevertheless capable of bearing the whole of the superincumbent weight. If the sole and frog, in reality supported the weight, then the foot would slip through the crust, when the frog and sole were taken away. But, as the crust supports the weight, even when the sole and frog are removed, there can be no doubt, but, that one of the functions of the crust, is to support the animal. And as each of the fleshy lamina, which connects the crust with the coffin-bone, is elastic, they act as so many springs to prevent concussion when the horse is in action. The sole of the foot, is connected with the lower surface of the coffin-bone, by a fleshy substance, called the sensible sole, and the blood-vessels of this part, secrete from the blood, the horn of which the sole is composed.

The use of the horny sole, is to protect the sensible sole from injury, to act as a stop by embracing the ground; and when the laminated substances elongate, the horny sole at the heel descends. This action of the horny sole, contributes very considerably, to assist the lamina in preventing concussion when the horse is in motion.

The bars, are two in number. They are placed between the frog and sole, and at the heels, form a broad solid junction with the crust; But are scarcely ever discernable in a horse, after he has been shod by the common Farrier. The toe, or small part of the bar, sometimes reaches externally nearly as far as the toe of the frog. The bars within the hoof, are laminated in the same manner as the internal part of the crust, and are attached to the horny sole.

The use of the external bars, is to keep the heels expanded;



expanded ; and the internal lamina of the bars, are intended to prevent dislocation or separation of the sensible sole, from the horny sole. In a natural hoof, there are two large cavities between the frog and bars.

The frog is placed in the centre of the sole, is of a wedge-like form, pointed towards the toe, but extending, as it advances to the heel : It is composed of horn, projects very much in an healthy state, and occupies near half the foot. (See Plate II. Fig. 1.)

In the centre of the broad part, there is a fissure or separation. The frog, is connected internally with another frog, of a similar figure, but different in structure. The external frog is composed of soft elastic horn, and totally insensible. The internal frog is much more elastic than the horny frog, and has sensation. When in a state of nature, it acts as an elastic cushion, on which the weight of the horse in part descends, preventing concussion, and acting as a wedge against the ground to prevent him from slipping. Its shape in a horse that has never been shod, clearly demonstrates, that it is formed to come in contact with the ground ; as well as from the diseases which invariably ensue, on its being deprived of this, its natural function.

Previous to the first application of a shoe, the Farrier cuts away part of the frogs and bars : the heels in consequence contract, the bar is no more seen, and the frog becomes soft, spongy and sore. The shape of the foot is besides entirely destroyed, and changes from a circular, to a narrow oblong form. (See Plate the II. Fig. 2.)

The consequences, are now further felt, by the muscular structure within the foot, being distorted,  
in

ed, with four nails placed in each quarter, approaching the heel. By this method, the frog is prevented from coming in contact with the ground; while the nails confine the growth of the hoof, and prevents it from expanding.

The horn of the hoof, grows from the coronet downwards, expanding as it descends; but the bars which form the natural wedge of the foot, to keep the heel expanded, being destroyed, a contraction of the heel must be the natural consequence; and to hasten this yet more, as nature might be too tardy, the nails are placed on each side of the heel, which almost prevents even the possibility of its expanding.

The structure of a horse's foot, is however so strong, and the natural growth frequently so powerful, that even those artificial impediments, are not sufficient to prevent the growth of the heel from expanding; in which case, the shoe is removed to the sole, where, if it remains any time, it is almost certain to produce corns.

It appears, that the disposition of the crust to grow down obliquely, is even greater than the influence of the nails, and concavity of the quarters of the shoe, to confine the crust. Nevertheless, it is equally true, that the nails and shoe, have a powerful effect, in diminishing the natural degree of expansion of the hoof; and, accordingly, from their perpetual influence, and the removal of the frog and bars, we find that the heels of almost every horse shod in this manner, are more or less contracted. The hoof, naturally circular, becomes altered to an oblong figure; and instead of being as wide as it is long, its length is frequently double,



double, and sometimes treble the width.

Any shoe however, can be employed for a time, without pain or any obvious inconvenience. If the sensible parts are not wounded, the horse will be sound at first with any shoe ; but ultimately the common shoes, combined with the common practice of cutting the hoof, generally produce corns, thrushes, or contracted feet ; and frequently all those diseases in the same foot.

It has been affirmed, that a long hoof, is a hoof of the greatest perfection ; but to suppose that art can improve, and alter for the better, the natural form of the hoof, is an absurdity too great for serious refutation : and as the common practice of shoeing produces a very considerable alteration in the form and structure of the hoof, no stronger proofs can be required of the necessity of abolishing a system, that produces deformity.

It has been already observed, that the sole, and frog at the heels, were formed to act as a spring ; but while the shoe is fixed, and in actual contact with the insensible sole at the heels, the descent of this organ is obstructed, and the sensible sole becomes bruised and inflamed.

As we have pointed out some of the inconveniences of the common shoe, and the baneful effects of cutting the frog and bars ; we shall now proceed to describe the principles and practice of shoeing, which have been found by experience, to be capable of preserving the form, structure and œconomy of the hoof, impaired by shoeing.

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THE PRINCIPLES AND PRACTICE OF SHOEING,  
WHICH PRESERVES THE FOOT IN HEALTH.

THERE are two circumstances necessary to be attended to in shoeing, viz. to cut the hoof, and apply a shoe. Before the hoof is protected by iron, some parts require to be removed, and others preserved. This part of the practice is even of more importance than the form of the shoe. But men have attended chiefly to the shoe, and not to its application, or to the hoof; and this error has produced more mischief, and more enemies to the practice of the Veterinary College, than all the prejudices, and calumnies of Grooms and Farriers. A horse's shoe, may be formed mathematically correct, and yet produce lameness if the bars and frog are removed, the heels of the shoe allowed to rest on the sole, or the frog raised from the ground. The very best shoe, will produce more mischief when applied to a hoof improperly cut, than the worst shoe, when well connected to a hoof prepared with judgement.

The first thing to be attended to, is to take away a portion of the sole, between the whole length of the bars and crust, with a drawing knife. (See Plate the II. Fig 1.) The heels of the sole, as has already repeatedly been observed, cannot receive the pressure of the shoe without corns. To avoid pressure, the sole should be made concave or hollow, and not allowed to be in contact with the shoe. If there be any one part of the practice of shoeing more important than the rest, it is this removal of the sole, between the bars and crust. When this operation is performed, the horse will  
always



always be free from corns, whatever may be the form of the shoe ; but, if the sole is suffered to be flat at the heels, and pressed upon by the shoe, it is of very little importance what kind of shoe is applied. Every Groom, and every Smith, is fully convinced that the sole will not bear pressure ; and to prevent this effect, they remove the whole of the bars, by opening the heels, and applying a concave shoe. We have endeavoured to prove, that the destruction of the bars is always improper ; that this practice is the remote cause of corns, the very disease which it is intended to prevent ; and that the bars are very necessary to preserve the circular form of the hoof. Besides this, the heels of the shoe should be made to rest on the junction of the bars with the crust, but if the bars are removed, then the shoe is supported by the crust only, and not by the solid broad basis of crust and bars united.

Any Horse may be pricked in shoeing by accident, but corns proceed from neglect. I have never seen a single instance of this disease, where the sole at this part has been concave, the bars preserved, and the shoe properly applied. It is necessary that the sole should be cut, before any other part of the hoof be removed. If the heels have been first lowered, then possibly there may not be sufficient sole left to enable a drawing knife to be applied, without reaching the sensible sole ; whereas, by cutting the sole in the first instance, we can determine on the propriety of lowering the heels and shortening the toe. The sole, can then descend without the motion being obstructed by the shoe, and any foreign bodies that may have been received,  
into

in the same proportion as the foot, the pressure from without, having the same effect on the feelings of the horse, as tight shoes must have on the foot of the human subject, by which he must sooner tire. The circulation too, being so entirely impeded in the shrivelled frog, it frequently corrupts, and the frog becomes a foetid ulcer, discharging from the cleft a most offensive matter: in this state, it is termed a running thrush. The parts are now very tender, and a blow from a stone occasions so much pain, as to render him liable to fall; if this state still increases, frequently the ulcer extends to the sole, which it pervades, and the whole becomes one continued ulcer; as is the case in what is termed canker. The foot becomes also still more contracted, the circulation of the whole so violently oppressed, that the blood-vessels of the fetlock-joint are affected, and frequently produces a permanent inflammation without any apparent cause, which is the case in what is commonly termed chest foundered. As depriving the frog and bars from coming in contact with the ground, produces diseases; it is to be presumed that they become so from their uses being perverted: this is still more forcibly exemplified, by their form and structure being restored, and even their diseases cured, when brought into contact with pressure.

We cannot suppose that the All-wise Creator, would have made an organ much exposed to injury, without making its structure adequate to its function. We see that animals destined for a cold climate, are provided with a much warmer covering, than animals in a higher temperature: we discover that the eye is admirably constructed for receiving



ceiving light ; the ear for the vibrations of sound ; and every organ, in every animal, beautifully formed to answer its peculiar use. Shall we then doubt, that the frog is made with the same degree of wisdom as other organs ? Shall we not conclude, that it was intended to receive pressure, since its convexity must make it liable to touch the ground at every step ? The more we investigate this subject, the more we are convinced, that the uses of the frog are to prevent the horse from slipping, to preserve the heels expanded, and by its motion, to act as an elastic spring to the animal.

Mr. Saintbel, and many others were of opinion, that the use of the frog, was to serve as a cushion or guard to the tendon of the flexor muscle of the foot. Where this opinion prevails, it is very natural to conclude, that art should endeavour to raise the frog from the ground by a thick heel shoe, in order to guard the tendon from bruises.

But if it be a truth, that this projecting body was intended to enter the ground, then it will follow as a law of nature, that unless the frog perform its functions, it must be diseased. Indeed, common observations clearly prove, that no animal, or any part of an animal, can be preserved in health, where the natural functions are perverted. If the real functions of the frog had been equally well understood, then it would have been thought as necessary for the health of this organ, that it should be in contact with the ground, as we know it to be important for an active animal to have motion.

That the frog was not made to defend the tendon, can be demonstrated. There is no medical man, in the least acquainted with the structure and economy of tendons, but must be fully convinced, that the frogs of Horses cannot have been formed

to

to protect the tendons from injury. It has been proved by experiment, that the substance of tendons in health has no sensation; and consequently that one insensible body, (*viz.* the frog) cannot have been made for the purpose of protecting an organ void of feeling. Again, the frog, being made of a wedge-like form, a great part of the tendon is not covered by the frog, and more than one half of it projects behind the tendon. If the frog had been made to act as a cushion to save the tendon, then its shape and magnitude would have been exactly equal to the tendon.

The practice of shoeing, very much depends on the functions of the frog being understood. If the opinions here advanced, respecting its uses be well founded, then it must follow, that paring the frog and raising it from the ground annihilates its functions, and ultimately, if not immediately, produces disease; and that exposing the frog to pressure, is the only proper method to keep it in health: moreover, it has been demonstrated from experience, that unless the frog sustains an uniform pressure, it becomes soft and inflamed, and the heels contracted; but if this organ be always in close contact with the ground, then it will be callous, insensible, and healthy, and most of the diseases incident to the foot prevented.

Granite, and other hard substances have no effect on the frog when it is preserved, and the hoof properly shod; but, when it is soft and tender, in consequence of being cut, one stroke from a projecting stone will produce pain; while perpetual pressure on a proper shoe, is attended with salutary effects.

Having



Having superficially described the formation, and uses of the crust, sole, bars, and frog ; I shall now proceed to examine the common method of cutting the hoof, and the form of shoe generally employed : we shall then be able to determine, if that practice be compatible with the principles here inculcated ; and if it be capable of preserving the hoof in its natural form, unimpaired by shoeing. This object should be particularly kept in view ; as that practice must indubitably be the best, that allows the different parts to perform their respective functions, and preserves them in their original condition. Before any shoe be fitted to the hoof, the bars are totally, and the frog partly removed : if it be true that the bars are made to prevent the heels from contracting, or indeed if the bars have any function, it must be lost when they are destroyed. Any man in the least acquainted with the wisdom of nature will be convinced, that if the bars had been of no use, they would not have been created : As they are always found in a natural hoof, the conclusion is self-evident, that they are of some use ; that use we have attempted to demonstrate, is to preserve the heels from contracting.

The removal of the bars, is termed, opening the heels ; and is performed for the express purpose of preventing the heels from contracting. But it is rather unfortunate, that this operation, intended to prevent corns and contracted heels, should be the remote cause of the very diseases designed to be obviated. The frog being cut, becomes very susceptible of injury, and incapable of acting as a stop to the animal, or performing its other functions.

When the hoof is thus prepared, a shoe is applied

into this cavity, are always forced out when the sole descends, without producing any mischief.

It might be expected, that the sole at this part would be bruised by gravel and stones : but we find from experience, that the sole never suffers, where there is a cavity between the bars and crust for such substances to escape. When the shoe is applied, the cavity between the sole and shoe should be sufficiently large at every part to admit a large horse-picker, and particularly between the bars and crust. If the sole is naturally concave, a shoe with a flat surface applied to the crust, will not touch any part of the sole ; and if the sole be flat, or even convex in the middle or towards the toe, the quarters and heels of the sole, will generally admit of being made concave with a drawing knife, so as not receive any pressure from a flat shoe. I never saw a hoof that would not admit of this operation, where the horse had been properly shod, and the bars and heels preserved. It is equally true, that the sole, when flat, and in contact with the shoe, is very liable to be bruised.

It therefore follows, that where the sole can be made concave, a shoe with a flat surface may with safety be applied ; but where parts of the sole, from disease or bad shoeing, become flat, a shoe with a concave surface is required as the hoof is always growing, and as the shoe preserves it from friction. The toe of the crust requires to be cut, once in about twenty eight days.

The bars and frog should never be removed. When they are ragged, it is better that they should be cut with any small knife by the Groom, than by the Farrier ; for if the latter is once allowed to touch  
the



the frog, the found parts are generally destroyed. Where the frogs are not large and projecting, and the heels are higher than the frogs, then it is advisable to lower the heels, for in every case we are to endeavour to bring the frog in contact with the ground. We should never lose sight of this principle, that the frog must have pressure, or be diseased. If the frog does not touch the ground, it cannot perform its duty, and no organ can be preserved in health, that does not perform the functions for which it was made. Nevertheless, where the frog has been disqualified for its functions for a considerable period, and become soft, it must be accustomed to pressure by degrees. If the eyes have been deprived of light, it would be dangerous to apply the natural stimulus very suddenly. If the horse has been long without exercise, he will be diseased, and must be brought to labour gradually; and in like manner, the frog, and every other organ that has been placed in an unnatural condition, will receive mischief from any sudden and violent change.

If the heels are high, and much exceed the convexity of the frog, it will be necessary to lower the heels, and endeavour to bring the frog and heels of the shoe on the same parallel line.

Where the horse is required to work, and the frogs are soft and diseased, they may be gradually exposed to pressure, by lowering the heels about the tenth of an inch every time of shoeing, until the frogs become hard and equally prominent with the heels; or if the horse be not required to work, great advantages will be derived from his standing without shoes on hard pavement, and the heels may then  
be

be lowered half of an inch each time he is shod.

Great caution is however necessary to lower the heels. If the frog is an inch from the ground, and the heels lowered sufficiently, to bring the frog in contact with the ground too suddenly, lameness may be induced : great care therefore must be taken not to lower the heels too suddenly.

But, as the feet of horses are so variously deformed by bad management, it will be requisite in shoeing, to attend to each particular kind of hoof. If any form of shoe be indiscriminately employed for all kinds of feet, it must frequently fail of success : but by a proper attention to the different hoofs, we can generally improve the whole foot, so as to adopt the shoes recommended at the Veterinary College, with advantage.

After the hoof has been cut, and properly prepared, then it becomes requisite to apply a shoe, and to vary its length, breadth, and thickness at the heels, surfaces &c. according to the hoof. If the heels of the fore feet, are two inches and a half, or more in breadth, the frog sound and prominent, and the ground dry, then only the toe of the hoof requires to be shortened, and afterwards protected by a short shoe. (See Plate the II. Fig. 1.)

This shoe is made of the usual thickness at the toe, but gradually thinner towards the heel. A common sized saddle horse-shoe, may be about three eighths of an inch thick at the toe, and one eighth at the heel. The intention of this shoe is to bring the frog completely into contact with pressure, to expand the heels, to prevent corns, thrushes, and canker : in this warm climate where the ground is not subject to much moisture,



no other protection for the hoof is requisite.

It has been supposed, that stones and other hard bodies would destroy the hoof ; but whenever the frog is sound, and the ground free from moisture, the growth of the horn at the coronet, is always equal to the consumption of hoof below : but in the winter months, when the roads are wet, the horn will be worn more from one day's labour, than from several weeks in summer. I have known some light horses, whose hoofs have been sufficiently strong, to wear short shoes the whole year in England, but such cases are not common. Nevertheless, the short shoe can be employed on most horses with advantage in summer, when the heels are from two inches and a half, to three inches in depth, and the frog equally prominent but, unless the hoof has been properly preserved, the heels, and frog, are generally too low to receive the short shoe. The toe of the hoof requires to be shortened as much as possible ; but if the frog touches the ground, no part of the heels should be cut : by pursuing this practice, the heels will frequently grow sufficiently high to receive the shoe.

It is to be observed, that the horny hoof is rendered soft, and wears very fast where the earth is wet ; and vice versa. As there is little moisture in India, the horse might be shod after this manner (*i. e.* with slippers) all the year round, which would assist in relieving his feet if diseased, and preserving them if sound.

If the frog should not at first be sufficiently callous to resist hard bodies without pain, this inconvenience will be frequently removed by rest, and the constant pressure of hard pavement ; and if  
the

the heels, cannot be lowered sufficiently to bring the frog against the ground, a triangular piece of Iron or very hard wood, made to cover the surface of the whole frog, may be applied and fastened with a clasp of iron going across, and lodged under each side of the shoe. This artificial frog, must be made as thick as the frog is removed from the ground; by which means, when the horse is standing at his picquets, the frog will receive pressure, and the benefit arising from it, will be very conspicuous: the frog from being soft and tender, will become hard and broad; and in the course of a few weeks, will project sufficiently to come in contact with the ground.

Whether a long or a short shoe be applied, it should be very thin at the heels. If the shoe is a quarter of an inch thick at the toe, it ought to be but one third of that thickness at the heel. Another consideration, is the length of the shoe. If a short one is applied, it ought to extend no further than the one represented in Plate the II. Fig. 1. and if a long one is employed, it ought to end where the bar joins with the crust.

As it has been recommended at the Veterinary College, to thin the heels of the shoe gradually, many have adopted the same principle in shortening the shoe; but we have attempted to demonstrate, that the shoe, should either rest on the junction of the bars with the crust, or be short of the seat of corns about three-fourths of an inch as in Plate II. Fig. 1. and that the intermediate length will be liable to produce lameness.

We have already observed, that when horses are shod in the usual manner, four nails are placed in each



each quarter of the crust, nearly opposite, and that this practice confines the growth of crust, and contracts the heels. To obviate this defect, the shoe should be nailed all round the toe of the crust. The toe is by much the thickest part of the crust in the fore hoofs\*, and therefore capable of receiving nails, with less danger of wounding the sensible parts within, than at the quarters, where the crust is generally thin; and by preserving the greater part of the quarters free from nails, the heels are allowed to expand. If however, the whole quarters and heels of the shoe have no nails, the great length of lever from the last nail to the extremity of the heel, will be very liable to displace the nails, and to occasion the loss of the shoe; therefore, only about one inch and a half of the heels of the shoe, may be left without nails.

The outside, is thicker than the inside crust; and if the nails, are kept from the heel on the inside, the quarter of the hoof will not be confined; but where the crust is thin or broken, this length of shoe without nails, would be too long.

The nail holes, and the nails employed at the College, are made very differently from those in common use. The nail holes are stamped with a punch of a wedge-like form, (See Plate the II. Fig. 3 and 4) and the heads of the nails are of the same figure, and received into the nail holes; and then the shoe remains, so long as there are heads to the nails.

The head of the common nail is not conical, but nearly square; and no part is received into the  
nail

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\*In the hind feet, the quarters and toes are nearly of the same substance.

nail hole. When the nail is driven into the shoe up to the head, the Farrier generally continues to hammer with great violence, and as the nail hole cannot admit the head, the texture of the nail contiguous to the head is shivered, and in a few days is broken; whereas the head of the college nail, operates as a wedge; the more it is hammered, the more firmly it is connected with the nail hole, so as to become part of the shoe. Moreover the head of the common nail, when not injured by the Farrier, projects beyond the shoe, and when worn out, the shoe is liable to come off. This accident will more frequently happen, if the nails are placed in the old nail holes of the crust. Before the nail holes of the shoe are stamped, the Farrier should examine the situation of the former nails; and by having new crust for the nails, the shoe will be more firmly connected with the hoof.

At Woolwich, where Mr. Coleman has seen this practice particularly attended to, he has had no such disease; although he has been witness to numbers in the same kind of horse incurably diseased with canker, from the common practice of shoeing. This practice, is to cut away the frog, leave the heels very high, and turn up the outside heel of the shoe. The frog then becomes soft and diseased, and the internal part of the extremity, necessarily supports so much weight, as frequently to occasion splents and spavins.

Horses are very liable to strike one leg with the opposite hoof; this accident is termed cutting. The part most frequently bruised, is the side of the fetlock joint. Where the toe of the hoof is turned  
out



out, the inner quarters of the shoe or hoof are more frequently the parts that do the mischief; but when the shoe is turned in, the injury is done by the anterior part of the shoe.

If the toe is turned out, the inner quarter of the crust is most frequently lower than the outer. This position of the hoof, necessarily inclines the fetlock joint of the foot that supports the weight, nearer to the foot in motion.

Farriers generally attend to the hoof that cuts, and not to the hoof of the injured leg: while the leg is in the air, no shoe can alter its direction, and the small quantity of horn or iron that can be removed from the hoof and shoe, very rarely prevents cutting. But it is very practicable to alter the position of the leg that supports the animal, and thus the foot in motion may pursue the same direction without being liable to cut. The outer quarter of the crust should be lowered, and the inner quarter preserved. This operation, will tend to make the bottom of the hoof, the reverse of its former state, that is, the inside quarter higher than the outside; and this will throw the fetlock-joints farther from each other.

Where the sole is thin, very little of the crust can be removed from the outside; and then it will be necessary to attend to the shoe. The inner quarter should be thickened, and the outer quarter made thin; which will produce the same effect as altering the horn; or, if the hoof be sufficiently strong, both these remedies may be employed at the same time.

This mode of shoeing will also succeed, where the horse cuts below the knee, called the speedy cut;

cut ; but, if the toes of the hoof be turned in, then it will be frequently found, that the outside quarters are the lowest : when this occurs, we pursue the opposite practice. The inner quarter of the hoof only should be lowered, and the outer quarter of the shoe made thicker than the inner.

From what has been observed, it appears, that in shoeing, the following principles must be attended to. The frog, is to be in contact with the ground, if the foot will admit of it without lowering the heels so much as to strain, what is termed the back-sinews. The sole should be hollowed out, that the shoe may not rest on any part of it, and particularly the seat of corns, between the bar and crust.

The shoe, (if a long one is used) should extend no farther back, than where the bar unites with the crust, and should be gradually thinned, as it extends to the heels.

The nails ought not to approach the heels, within an inch and a half.

The web of the shoe ought to be narrow, and sufficient room left, between it and the sole, to introduce a pricker ; which should be used every day.

By pursuing the system we have recommended, the natural form of the hoof may be preserved, and kept free from corns, contracted feet, thrushes, and canker.

Altho' the animal, as I before observed, is not so liable to bad feet in this country as in Europe, yet it is absurd to imagine, that the animal does not here also suffer from the ill effects of bad shoeing. I will venture to assert, there is a scarce a Regiment in the country on duty, but has one or more bad horses from complaints or accidents in the foot.

From



From my own observations, I have many times witnessed, not only accidents, as punctures from thorns, some of which have proved very tedious in the cure, and which could never have taken place in a sound foot; but also the running thrush, even so bad as to occasion the loss of the sole. \* Also a natural foot, is not near so liable to receive injury, as the common distorted one, and if an accident should happen even in the fetlock-joint, it is cured much sooner than in a distorted hoof.

I have been at particular pains, to render conspicuous, the advantages resulting from the Veterinary mode of shoeing: The value of the animal, the very severe service to which in the Cavalry he is exposed, renders a change necessary; but a more particular inducement was from the very great advantage, which would result from it in this country; and which I believe no other part of the world affords.

I think I have before mentioned, that the animal ought to be shod, from the first on our principle, to receive every advantage in full force. All Europe, does not afford an extensive opportunity of this kind. England, as well as other countries, purchase their Cavalry horses from the grazier, breeder &c. with their feet already destroyed; and it is Ganjam alone, which affords an opportunity on the most extensive scale, for receiving every benefit from its adoption.

It is this source, which I am informed is to supply the Cavalry with their remount horses; in  
which

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\* I am also informed, that while our Troops were in pursuit of Dundeah, during the rainy season, the running thrush became very general,

which case, it will be but a few years, before nearly the whole Cavalry will be mounted from Ganjam. The conspicuous advantages resulting from some mode, by which the Veterinary manner of trimming the foot, and applying the shoe, could be effected at Ganjam, are too conspicuous to need any further argument; and as to the difficulties attending such an arrangement and even for the supplying of the Regiments with Native Farriers, properly instructed in the mode recommended, are too trivial to offer any real obstacles.





## SECTION XI.

*OF DISEASES OF THE FEET.*

**I**T was before observed, the cause of contracted feet, proceeded from bad shoeing, and although the foot of a domestic horse may be more subject to disease, than any other part, yet if its functions are preserved by a rational mode of shoeing, they are the least liable to complaint of any part of the animal.

In describing the structure of the foot, I stated, that the coronet was a circular cartilage, well supplied with blood-vessels, acting as a gland to produce the horny hoof.

To effect a cure or relieve the animal from contracted heels, it is absolutely necessary a new hoof should be allowed to grow, uninfluenced by shoes, and which must be the unrestrained production of nature. This will be effected by keeping the feet without shoes, and encreasing the growth of the horn from the coronet. By rasping the sides of the hoof or quarters close under the coronet, the circulation is increased, and with it the secretion of horny matter. This operation should be repeated every four or five days, and the good effects will be soon obvious, for the new hoof growing from the coronet, will be soon observed to project a third of an inch wider than the old hoof below, and encreasing as it descends, a new hoof will be produced in two or three months, at least an inch wider.

wider at the heels than the old one, affording room for a broad convex frog and bars, and restoring to the animal an almost perfect foot.

To accelerate the growth yet more, the following stimulant application, may be rubbed round the coronet every two or three days.

Take of Spirits of Turpentine four ounces.

Spanish flies powdered one dram.

Mix and let it stand for three or four days, when it may be strained for use.

And to render the sensible parts, more pliable and yielding to the new growing horns, and still further promoting the growth of healthy horn, it will be very necessary to keep the feet of the horse moist. If a strong shallow tub, containing water about as deep as his fetlock-joint, for this purpose is not convenient, he may stand with his feet in straw that is kept continually wet; and if the animal should happen to have a running thrush at the same time, the moisture to the parts would be injurious; but this is obviated by filling up the bottom of the foot with pitch softened with tar, which will prove a very salutary application.

Supposing the animal to be laid up during this period, it will afford an opportunity of paying attention to other parts of the foot.

I before mentioned, that care was required in lowering the heels, in order to bring the withered frog in contact with the ground, and thereby restoring it to its destined use. The danger resulting from the heels being lowered too rapidly, is the probability of straining the back muscles when the animal is rode or exercised briskly; but these difficulties are entirely done away, if he be only exposed



posed to walking exercise for an hour every day for a month, by which the muscles and tendons of the leg will be so much habituated to the encreased extension; as to entirely obviate every future ill effects.

The heels should therefore be reduced, about a quarter of an inch every three weeks if they will admit of it, and the toe be pared away as much as it will bear; if the frog be very high, soft, and narrow, it would receive great benefit by the application of an artificial frog as described in the Section on shoeing.

The only medicine requisite internally, will be a few of the following mild exciting Balls, to increase the action, or restore the lost energy to the obstructed circulation of the foot.

Take of Yellow Resin half of a pound.

Camphire one ounce and a half.

Soft Soap, or Spirits of Turpentine sufficient to soften to a mass, which divide into twelve balls, and give one every three days.

By pursuing the above directions, the horse will be restored in two or three months in high condition, and with perfect feet, if the distortion was not before too violent.

Those who cannot spare the animal from his duty for such a length of time, yet wish to restore the natural form of the foot, are referred to the ensuing chapter on the running thrush or ulcer in the frog.

## THRUSH OR ULCER IN THE FROG.

This is attended with a very offensive discharge from the cleft of the frog, and is produced by bad shoeing contracting the heels, and thereby producing inflammation and suppuration in the internal frog, which makes its way through the cleft.

The more remote cause, arises from the frog being deprived of pressure, which is invariably the practice of the natives and the common farriers, who, previous to applying the shoe, cut away the Frog and bars to prevent what they term being bruised, altho' it is demonstrated in the Section on shoeing, that the frog is designed by nature to receive pressure. The cure must of course depend on restoring its proper function, and thereby removing the cause.

In this complaint there is no necessity to take the horse from his work, it will only require more time and caution to produce the desired effect.

A piece of cotton or tow, may be dipped in the following inguent, and pressed into his cleft, which should be repeated every day until the discharge ceases.

Take of Tar four ounces.

Oil of Vitriol two Tea-spoons full mix &c.

Or the following astringent powders, may be used and pressed well into the diseased part every morning.

Take of Linseed powdered one ounce and a half.

White Vitriol powdered half of an ounce.  
mix them for use.



In the mean while, to prevent inflammation taking place in some other part of the foot, and inducing lameness, the quarters may be rasped every four or five days, which prevents the degree of pressure on the circulation and the internal sensible parts. The heels should be lowered every three or four weeks about one eighth of an inch, or more if the toe will also admit of being reduced. For example, if the toe can loose a quarter of an inch, the heel may loose half that quantity, and the surface of the foot on the ground be not in the least altered, by which the muscles cannot be injured; and if the toe should happen to be pared to the quick, it will not be of the least consequence, as the horn will be produced again in two or three days.

A few diuretics or rather exciting balls, as recommended in the last Chapter, may be given to assist the enfeebled circulation; and if the horse is not hard worked, the blistering infusion as recommended in the last Chapter, may also be used once every five or six days, round the coronet.\*

Horses subject to thrushes, and indeed horses of every description in this climate, should be shod with short shoes as represented in Plate the II. Fig. 1. and however hard or stony the soil may be, the frog can receive no injury from it, but will on the contrary, be rendered more insensible and callous. This is exemplified in the horses of the late Gen. Elliot, when Governor of Gibraltar, who never had any shoes applied to their feet; and although the soil is particularly rough, the animal never received any injury, except sometimes a temporary lameness was induced from the toe being bruised,

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\*Moisture must not be admitted in this disease.

bruised, but this was always remedied by two or three days rest.

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#### CANKER OR ULCER OF THE SENSIBLE SOLE.

VERY little need be said on this disease, as I have scarce ever met with it in this country, altho' it is very common in Europe. This arises most probably from the horses in this country being lighter, and not exposed to so much moisture as those of England.\*

This disease is a continuation of the ulcer in the sensible frog, extending to the sensible sole, which in its natural state, produces the horny matter, of which the sensible sole is composed; but when inflammation takes place, suppuration soon follows, and the blood-vessels, instead of giving out horny matter, discharge a fungus of which the sole in this complaint consists.

There are also other causes, such as corns and quitters of long standing, extending to the sensible sole; but from whatever cause it may be produced, the cure is equally difficult.

The frog must be immediately reduced to the ground, and applications of a stimulant and drying nature, must be employed once or twice a day, as

Tar 4 Pints,

Oil of Vitriol one Pint mix and use;

or

Tar Three parts.

Blue Vitriol two parts, Mix and use.

And the parts may be washed at each dressing, with the tincture of Myrrh or Aloes.

And

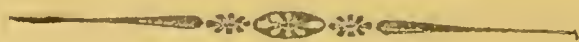
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\*Heavy Cart Horses which are exposed to much moisture, are most subject to this disease.



The blood-vessels of the hoof diminish in this complaint, and those of the crust increase in exact proportion ; for the same quantity of blood being supplied to the foot, and a less quantity being required at the sole, the superabundance is employed at the crust : thus the crust is produced in larger quantities, and grows very strong and thick. This led to an operation, which frequently proves successful when every other method has failed. I before mentioned that the blood-vessels of the coronet supplied the horny crust, consequently by dividing those arteries, a much larger quantity of blood is determined to the sole, which increases the production of horny matter, and with the assistance of the above mentioned applications, it is rendered hard, and a cure is sometimes effected.

When Mr. Coleman was first appointed to the Veterinary Surgeoncy of the Royal Artillery at Woolwich, the improper mode of shoeing had rendered this disease so common, that he cast horses to the amount of many thousand Pounds ; but since his system of shoeing has been practised, this complaint is nearly extirpated, and has scarce ever since appeared.



#### QUITORS AND CORNS.

THIS is a disease which as well as thrushes and canker, I believe is not so frequent in this dry soil, as in the more moist ; and perhaps the animal

mal is indebted to this circumstance, for not being more liable to diseases in the feet. I have every reason to believe, that a winter's duty in England would disable half the horses of an Indian Regiment of Cavalry, by the numerous diseases which the moisture would produce in the feet; for independent of the natural consequences of moisture in a distorted foot, my observations on the change which takes place in the feet of troop horses, when on duty for a few weeks in wet cotton ground, strictly confirms this assertion.

There are two kinds of quitor. The first is caused by a bruise or blow which the animal frequently gives himself on the coronet of the inside quarter, and inflammation, and supuration under the coronet succeeds, which not being capable to penetrate through the cartilage of the coronet, makes its way down the inside of the crust, which is facilitated by the natural structure of the part. This I before stated to be perpendicular lamina, very much resembling the inside of a mushroom; the matter destroying the lamina gravitates to the sole, where it first calls the attention by the lameness which it induces.

It has been the common practice to cut away the crust the whole length of the sinus, and treat it as an open ulcer. The consequence of such treatment will be that before the crust is renewed, and the animal rendered sound and fit for duty, five or six months must elapse.

A much easier and shorter cure is made, by rasping or cutting away the sole beneath the ulcer, 'till



'till you come to the quick ; and when the matter is discharged, introduce a long piece of lunar caustic the whole length of the sinus, that is, 'till the caustic meets with forcible resistance. The foot may then be tied up, and left for three or four days.

The caustic will destroy the callous and diseased surface of the sinus, which will slough away, and new granulations over the whole sore will be produced and fill up the cavity. The cure by this means is performed in three or four weeks.

To assist the cure, the foot may be kept in warm water for three or four hours every day, and the horny crust over the whole length of the sinus may be rasped or thinned, that the pressure may not be so great on the new flesh : Blisters round the coronet may also be of use.

If, after the cure, an excrescence should be observed on the coronet, it should not be meddled with, as it seldom or ever affects the animal ; while removing it, is frequently attended with a tedious lameness.

The second kind, is but the very worst state of a corn becoming a quitor, and is produced by bad shoeing.

The seat of corns, is between the bar and the crust, as in Plate II. Fig. 2. this should be always hollowed out with a drawing knife whenever the horse is shod, which is never done by the Native Farrier, consequently when the heels expand by a month's growth, the heels of the shoe is thrown into this part, where it produces inflammation ; a large quantity of blood is extravasated through the horn, and lameness follows. When it is discovered, that part of the sole should be drawn out to the quick, and the extravasated blood discharged ; after which, it may be dressed

dressed for a few days, with an ointment composed of an equal quantity of yellow Wax and Venetian Turpentine melted over a fire ; the parts may be then hardened with Tar and Vitriolic Acid, as recommended for thrushes.

If this complaint is not discovered, the animal will be occasionally subject to lameness, and other parts supposed to be effected ; while the true cause is concealed by the ignorance of the Salisttry or Farrier. Sometimes the extravasated blood is in too large a quantity to be absorbed, and not being able to penetrate so thick a part of the sole, it corrupts and dissolves the surrounding parts to matter, which now by necessity makes its way up the laminated fibres of the crust, to the coronet, and becomes a quitor ; which must be cured by the same process as recommended in the beginning of the chapter.

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CUTTING.

THIS is not in every instance a disease, but perhaps proceeds very frequently from a defect in the natural position of the foot, yet as it is remedied by shoeing, I have introduced it in this section.

Men employed to shoe horses have in this complaint, as well as in most diseases of the foot, acted in opposition to common sense ; they have given all their attention to the foot that cut, instead of the foot that was cut ; they conceived the error to be in the foot which was elevated from the ground and accordingly pared that side of the hoof, and took away iron from that side of the shoe, to prevent its cutting the opposite fetlock ; which treatment



ment was seldom or ever attended with success. Had they considered, that however they might deform and cut away the hoof or shoe, still its direction when in the air would be the same, which consideration would have led them to seek relief in the position of the other foot, which was not in action.

If we examine the position of our own feet on the ground, it is very obvious that raising or depressing one side or the other of the shoe, will cause the ankle to project externally or internally. Thus with the horse, if the foot which is cut, be pared on the outside about a quarter of an inch lower than the inner quarter, the fetlock will be thrown at least half an inch out, which is sufficient to prevent the elevated foot from touching it. This remedy is so simple and correct, that I have scarce ever known it fail.



### SAND CRACKS.

THIS complaint is so conspicuous, that I believe few can mistake it.

It is much more common in this country than in Europe, from the heat of the soil; and want of moisture; by which the horn looses its elastic texture, and very much resembles lime or chinam.

It generally attacks the fore feet and the inner quarter, from their supporting the chief weight of the animal.

It commonly proceeds from the coronet obliquely downwards, sometimes the crust alone is affected,

affected, and sometimes, as in the worst cases, the fleshy lamina is exposed.

I have frequently observed in this country, that they take an horizontal direction, but the mode of relief is invariably found to be the same.

The inside of the crack must be cut out or fired, and the cavity may be filled with soft pitch; the firing iron ought then be drawn in an horizontal direction above it and below it, making a pretty deep impression; by which means the diseased part of the crust will be detached from the parts in health, and the new horn growing above from the coronet will not be affected. If it takes a transverse direction, the two ends may be also fired. The bottom of the crust or hoof that comes in contact with the shoe under the crack, ought to be rasped away, that there may be no pressure on the shoe, which prevents the animal from receiving any pain from it when in action. The coronet may also be blistered, to promote the growth of the crust; and to prevent the future production from being of that limy consistence, the feet ought to be kept in water or wet straw a few hours every day.



#### INFLAMMATION OF THE ELASTIC LAMINA OF THE CRUST, GENERALLY TERMED INFLAM- MATION OF THE COFFIN JOINT.\*

THIS disease is not so frequent as is generally imagined, and Farriers frequently attach inflammation to this part, when the true situation is unknown to them.

It

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\* This complaint is frequently called chest-founder.



It generally succeeds the subsiding of inflammation of the lungs or some other part; sometimes it proceeds from contracted feet, and sometimes from violent exercise.

It is known by the animal favoring his fore feet, (which it always attacks) and expressing great pain. The hinder legs are drawn forward to support the chief weight of his body, and he seldom stands for any length of time, generally lying down to relieve his feet.

This disease is usually attended with a full pulse and general symptoms of inflamed action. The cure will consequently depend on the inflammatory diathesis being reduced. To effect this, his quantity of grain should be lessened one third or more, four quarts of blood should be taken, and blistering round the coronet is recommended. I must acknowledge I do not approve of this last application for it is most undoubtedly increasing the action of the parts; which might be necessary, if the inflammation was produced by accidents, as in bruises, strains &c. in which cases a state of debility in the circulation of the part is induced, and the stimulus of Spanish flies might be proper; but an inflammation of a part, succeeding and attended with general inflammation, I think may receive injury from such applications; It would therefore recommend the body to be kept open with emollient clysters, and repeating the bleeding if the inflammation does not abate. The Animal should also be made to stand with his fore feet in a tub of warm water, a little above blood heat. This should be continued for about four hours every day, after which, warm poultices of rice and milk may be bandaged

bandaged round the fetlock-joint. The toe of the frog will sometimes admit of being bled ; or if a bleeding can be effected in any other part of the foot, it will be of service.

If the inflammation be very great, and does not subside in a short time, the muscular lamina becomes ossified, and the animal is ruined. Sometimes the hoof comes off altogether, as the lamina is the chief bond of union between the sensible and insensible hoof.\*

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\* It will be observed that the common name of inflammations of the coffin-joint is erroneous, the seat of it being in the lamina of the crust. I have never known the coffin-joint to be inflamed, altho' I have seen many instances which the Farriers so termed,







# EXPLANATION OF THE PLATES.

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## PLATE I.

### FIGURE THE FIRST.

*A view of the natural hoof of the horse, being of a circular form, and shod with a short shoe.*

- a a a* The external surface of the sole, of a concave form.  
*b b* The inferior edge of the crust at the heels.  
*c c* The junction of the bars with the crust.  
*d d* The points of the bars.  
*e e* The sole between the heels of the crust and bars, the seat of corn.  
*f f* The heels of the short shoe not allowed to reach the seat of corn at *e e*.  
*g* The toe of the frog.  
*h h* The heels of the frog.  
*I I* The cleft between the heels of the frog, the external seat of thrushes.  
*k k* Two cavities between the sides of the bars, and the sides of the frog.

FIGURE



## FIGURE THE SECOND.

*A view of the hoof, with contracted heels, produced by the common method of shoeing.*

- a a a* The sole.
- b b* The original seat of the bars.
- c c* The seat of the original cavities, between the bars and crust, but now, from contraction; solid horn.
- d d* The frog very much compressed by the contraction of the heels of the crust.
- e e* The width of the hoof at the heels; not being more than one-half of its length from *f* to *g*.
- f* The extremity of the heels of the frog.
- g* The toe of the crust.

Fig 1.<sup>st</sup>  
Life Commenced

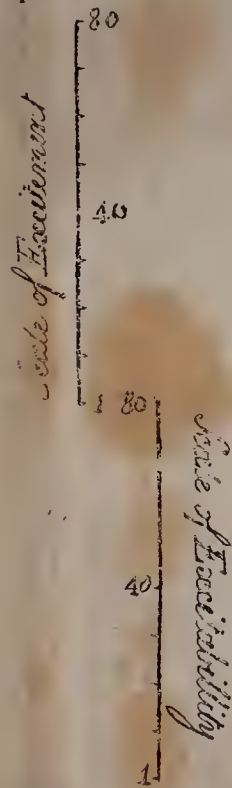


Plate 1<sup>st</sup>  
Fig 2.<sup>nd</sup>

Life Matured

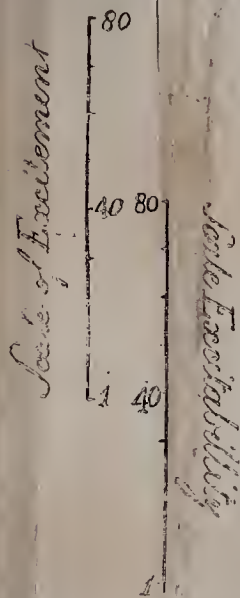


Fig 3.<sup>rd</sup>

Life Exhausted

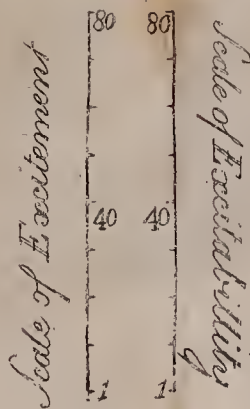






Fig. I

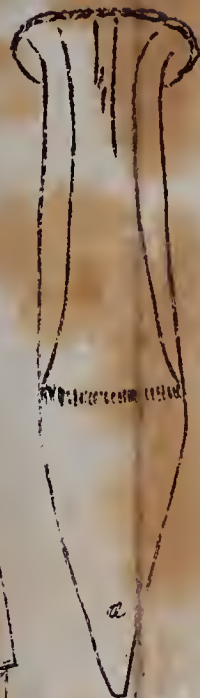
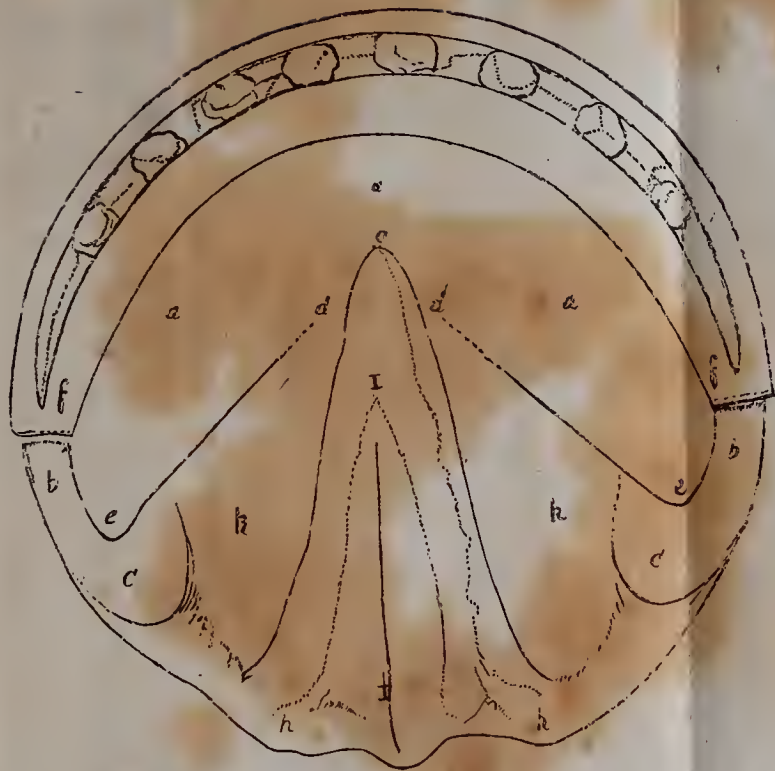


Fig. III

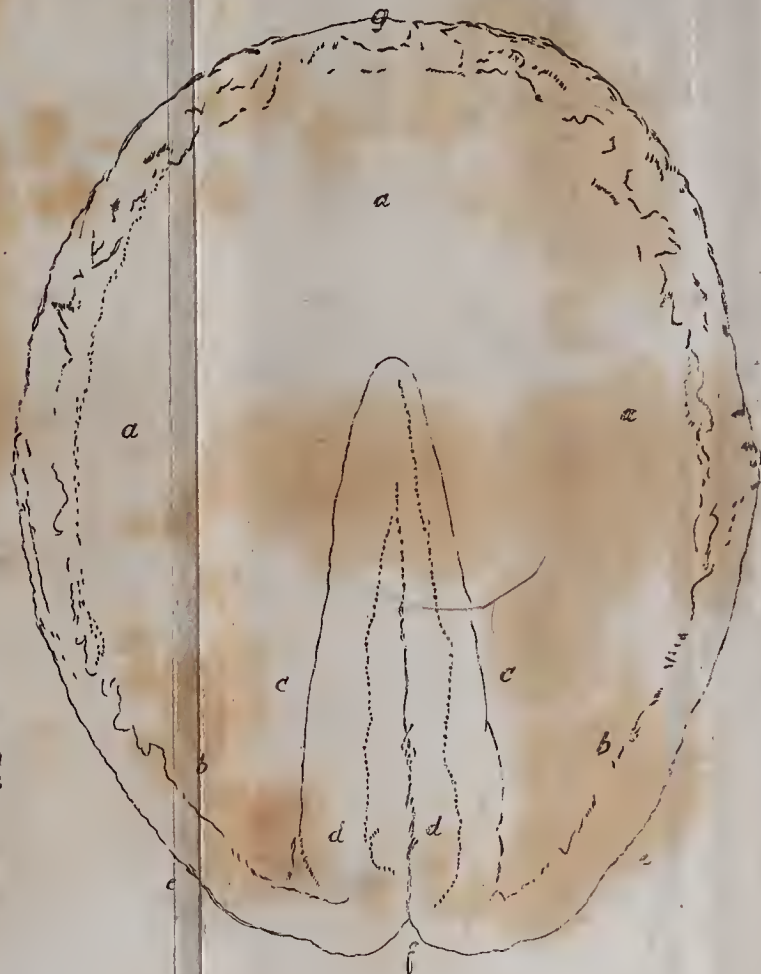
Fig. V



Fig. VI



Fig. II



















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